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TRADE NAME	MODEL	SET AND FOLDER No.
Ambassador	14MT, MTS, 16MT, MTS, 17MC, MCS, MT, MTS, 20MC, MCS, MT, MTS Tel. Rec.	173-2
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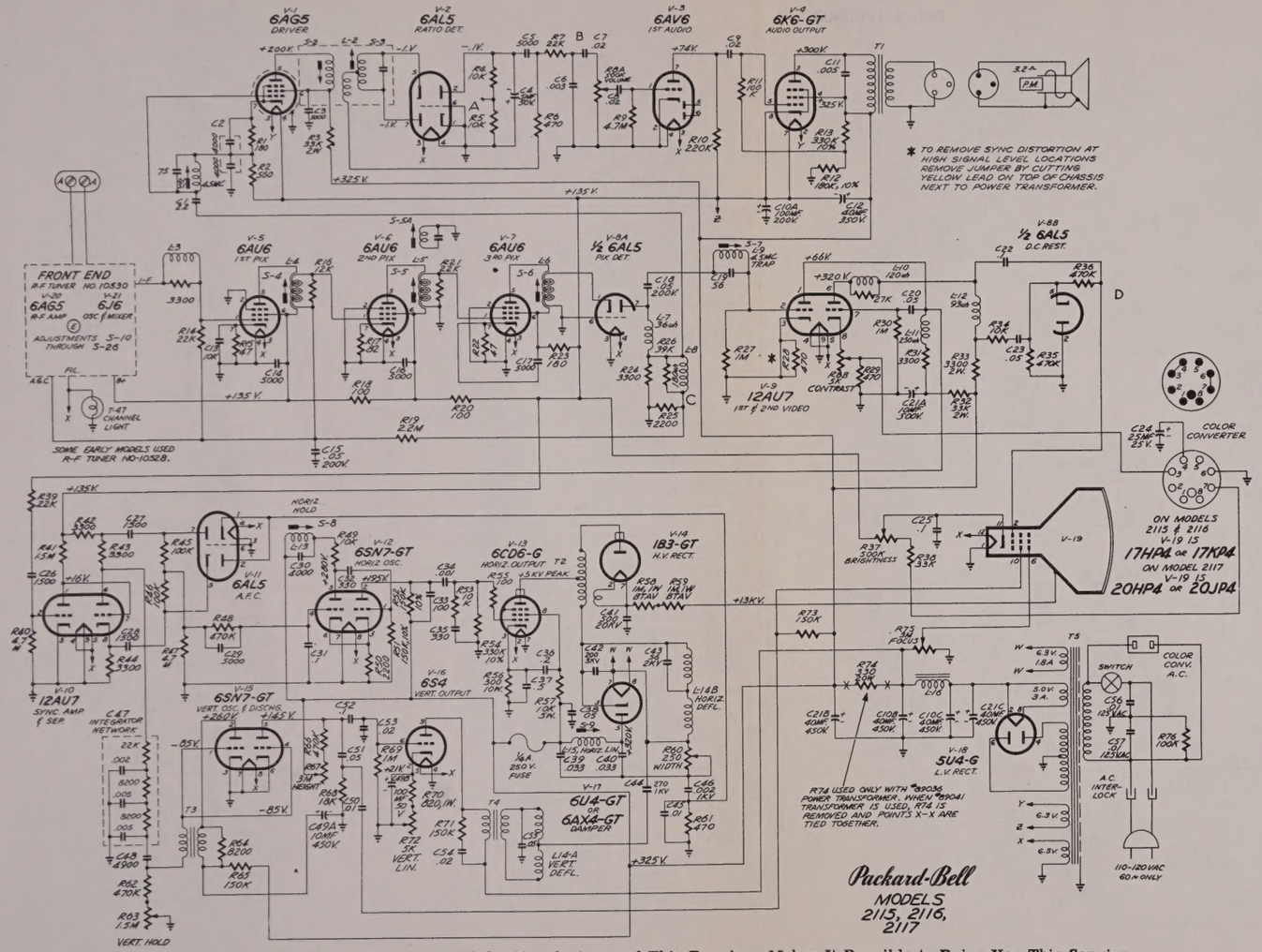
Automatic	P-651	173-4
Coronado	15RA37-43-9230A	173-5
Hallicrafters	S-72L	173-6
Jackson	JP-20	173-7
Jackson	254	173-8
Motorola	21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B (Ch. TS-351, A) Tel. Rec.	173-9
Packard-Bell	2115, 2116, 2117 Tel. Rec.	173-1A
Philharmonic	520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820 Tel. Rec.	173-10
RCA Victor	45-EY-4 (Ch. RS140)	173-11
Raytheon	C-2103A, C-2105A, M-2101A (Ch. 21AY21) Tel. Rec.	173-1A
Silvertone	1054, 1055 (Ch. 132.012)	173-12
Sonora	350, 351 Tel. Rec.	173-13
Trad	C-2020, C-2420, CD-2020, T-1720 Tel. Rec.	173-14



Packard-Bell
MODELS
2115, 2116,
2117

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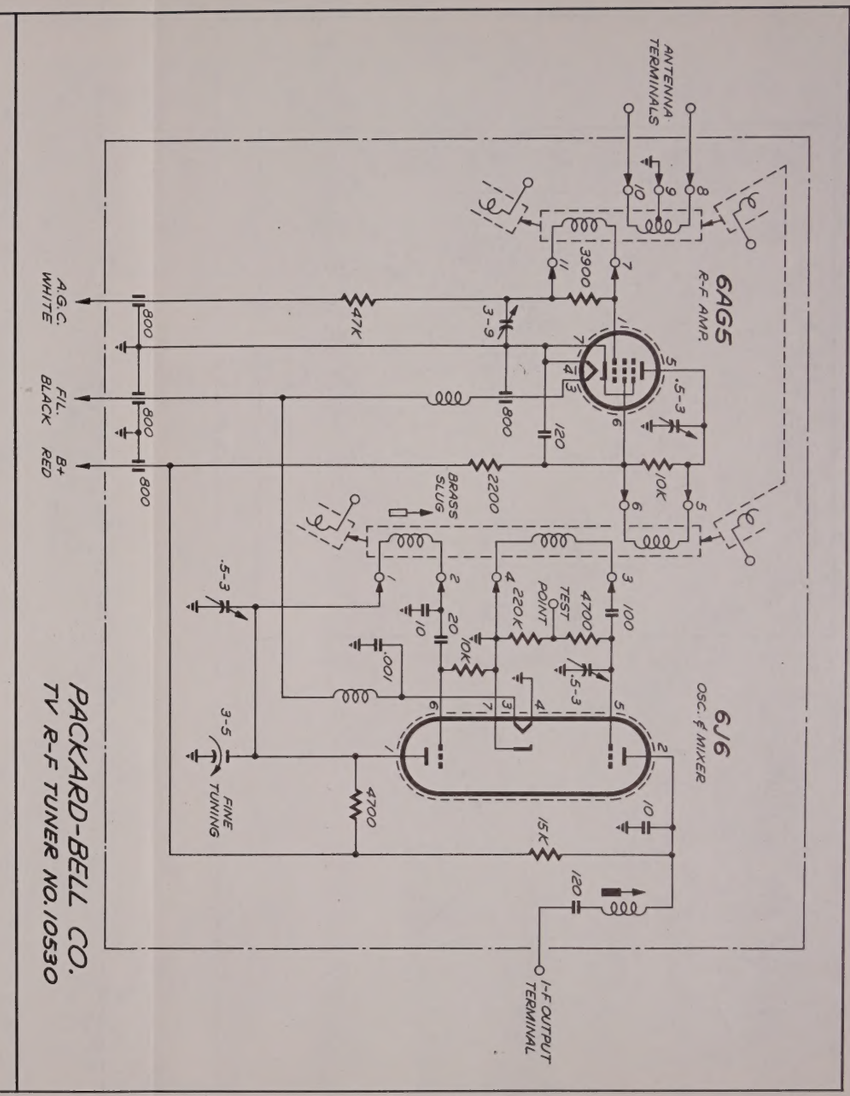

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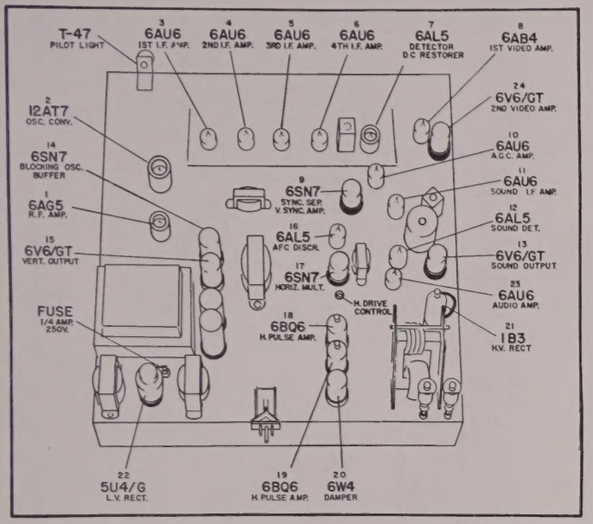
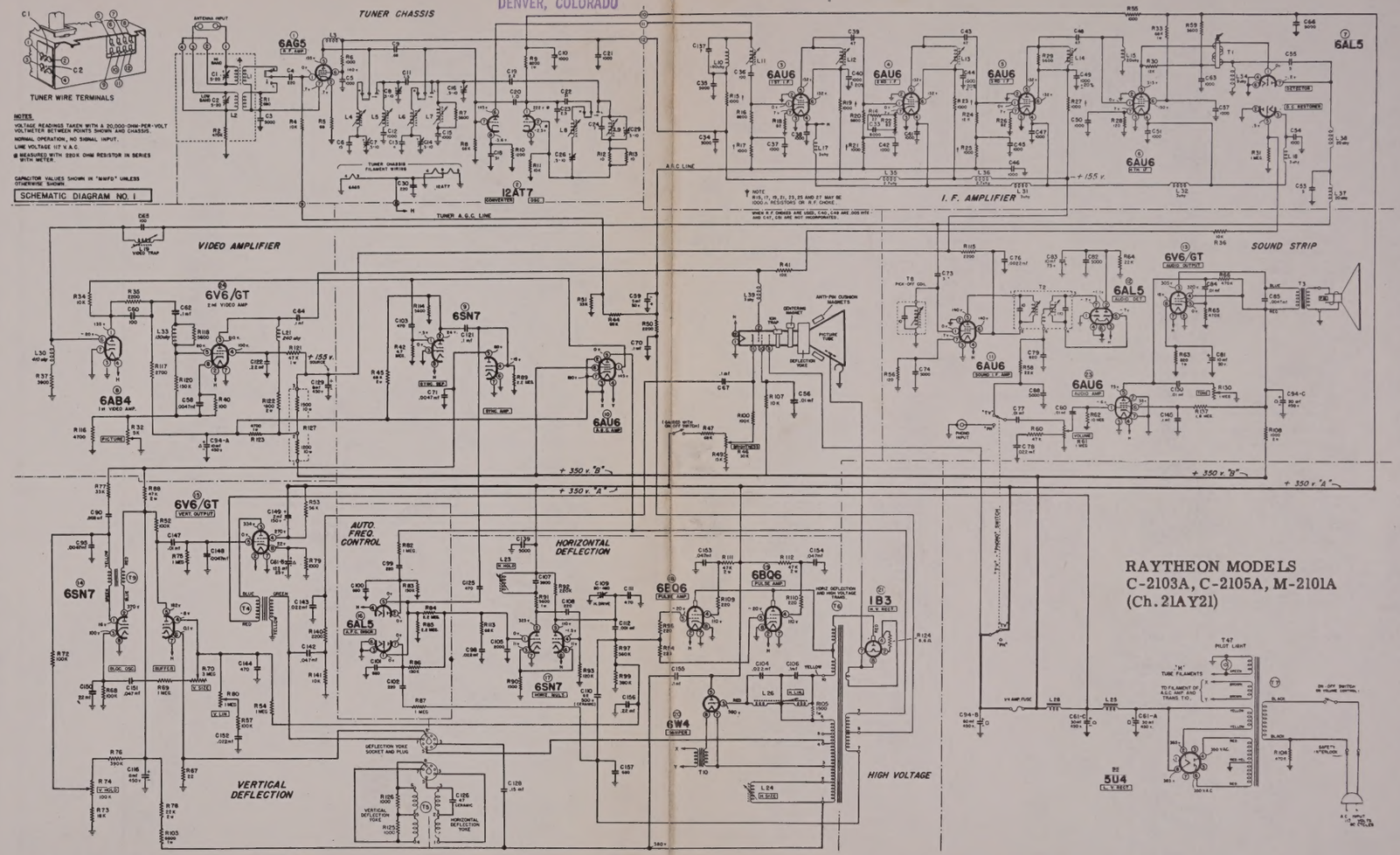


Tube Layout



NOTE: A 33 ohm resistor is connected in series with pilot light (R-143). C111 should be 680. C-157 should be 470.

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PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

SET 173 FOLDER 1A

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PHOTOFACT* Folder

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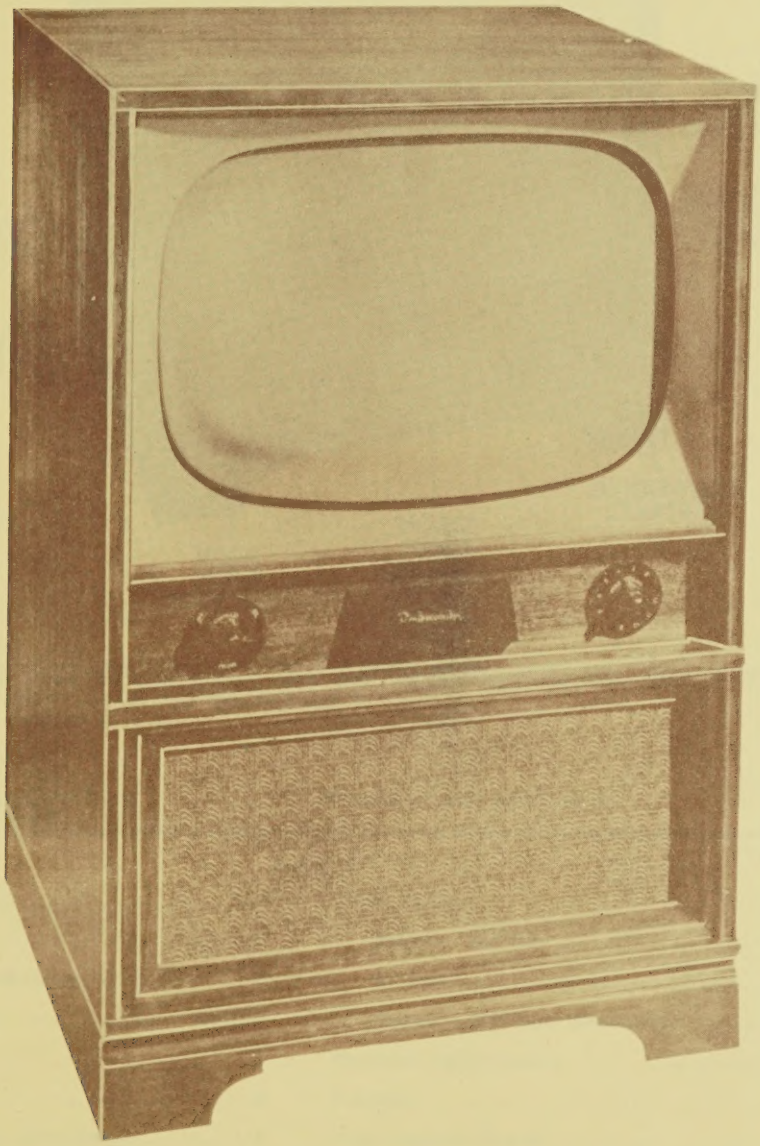

AMBASSADOR MODELS 14MT, MTS, 16MT, MTS, 17MC, MCS, MT, MTS, 20MC, MCS, MT, MTS

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DATE 7-52 SET 173 FOLDER 2

PHOTOFACT* Folder

*TRADE MARK

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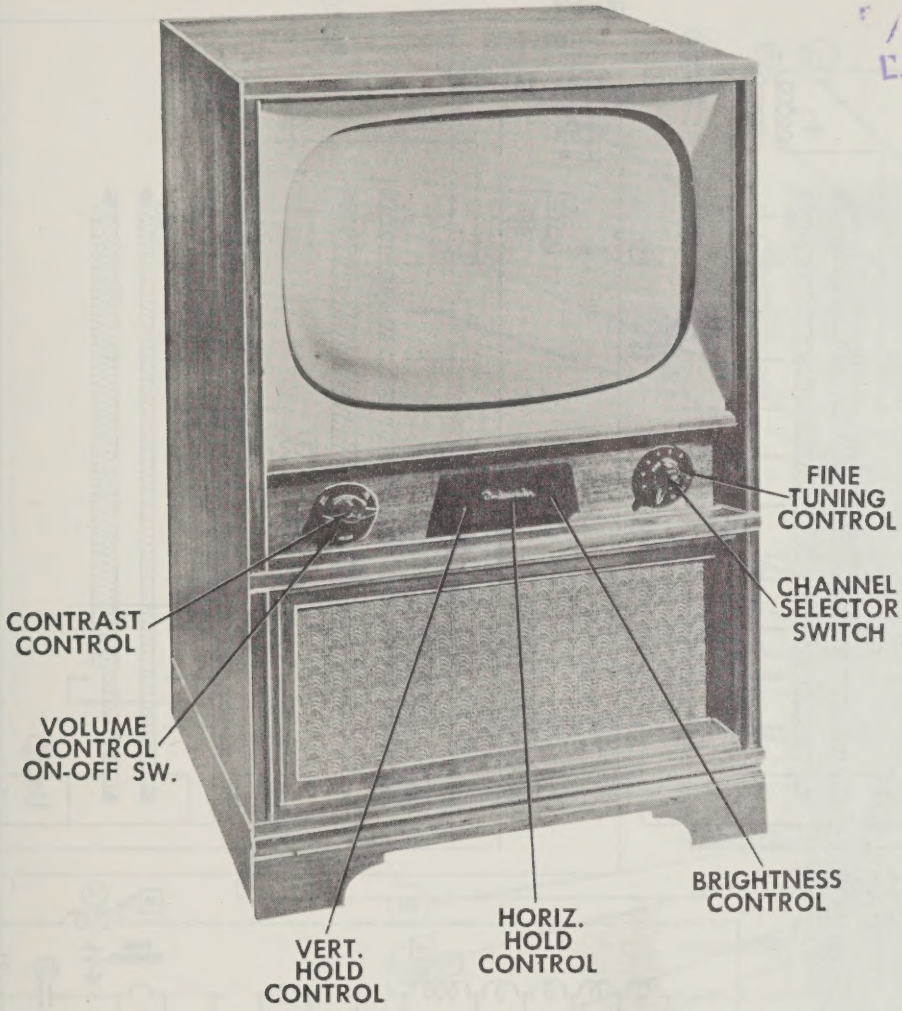

AMBASSADOR MODELS 14MT, MTS, 16MT, MTS, 17MC, MCS, MT, MTS, 20MC, MCS, MT, MTS

TRADE NAME	Ambassador Models 14MT, 14MTS, 16MT, 16MTS, 17MC, 17MCS, 17MT, 17MTS, 20MC, 20MCS, 20MT, 20MTS.
MANUFACTURER	Allied Pur. Corp., 401 5th Ave., New York 16, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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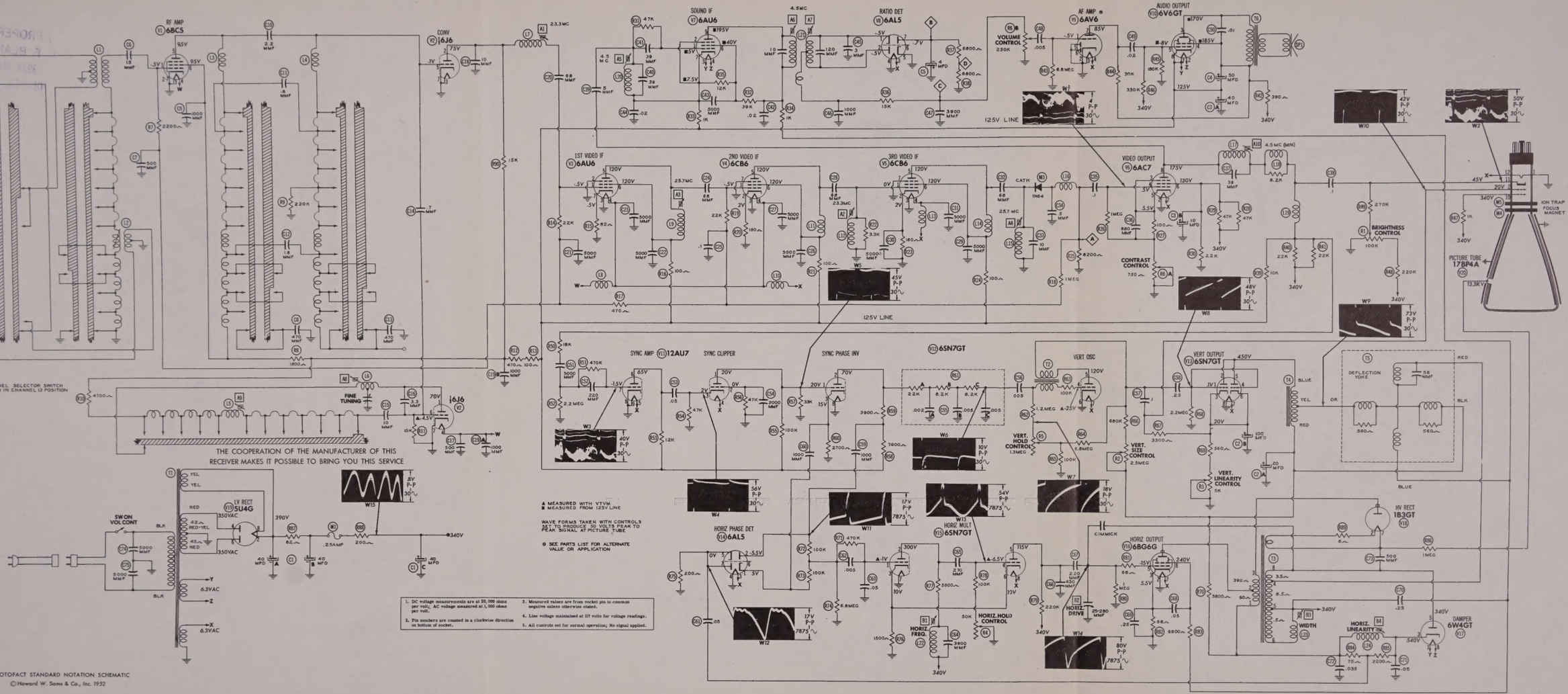
RF AMP V1 6BC5
CONV V2 6J6
SOUND IF V7 6AU6
RATIO DET V9 6AL5
AF AMP V9 6AV6
AUDIO OUTPUT V10 6V6GT
1ST VIDEO IF V3 6AU6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
VIDEO OUTPUT V6 6AC7
SYNC AMP V11 12AU7
SYNC CLIPPER
SYNC PHASE INV
V12 6SN7GT
VERT OSC
VERT OUTPUT V13 6SN7GT
HORIZ PHASE DET V14 6AL5
HORIZ MULT V15 6SN7GT
HORIZ OUTPUT V16 6BG6G
HV RECT 1B3GT V18
LV RECT V19 5U4G
DAMPER 6W4GT V17
VOLUME CONTROL
CONTRAST CONTROL
BRIGHTNESS CONTROL
VERT. HOLD CONTROL
VERT. SIZE CONTROL
VERT. LINEARITY CONTROL
HORIZ. HOLD CONTROL
HORIZ. FREQ.
HORIZ. DRIVE
HORIZ. WIDTH
HORIZ. LINEARITY
FINE TUNING
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
ION TRAP
FOCUS MAGNET
PICTURE TUBE 17BP4A
DEFLECTION YOKE
SW ON VOL CONT
125V LINE
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
▲ MEASURED WITH VTVM
■ MEASURED FROM 125V LINE
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
1. DC voltage measurements are at 30,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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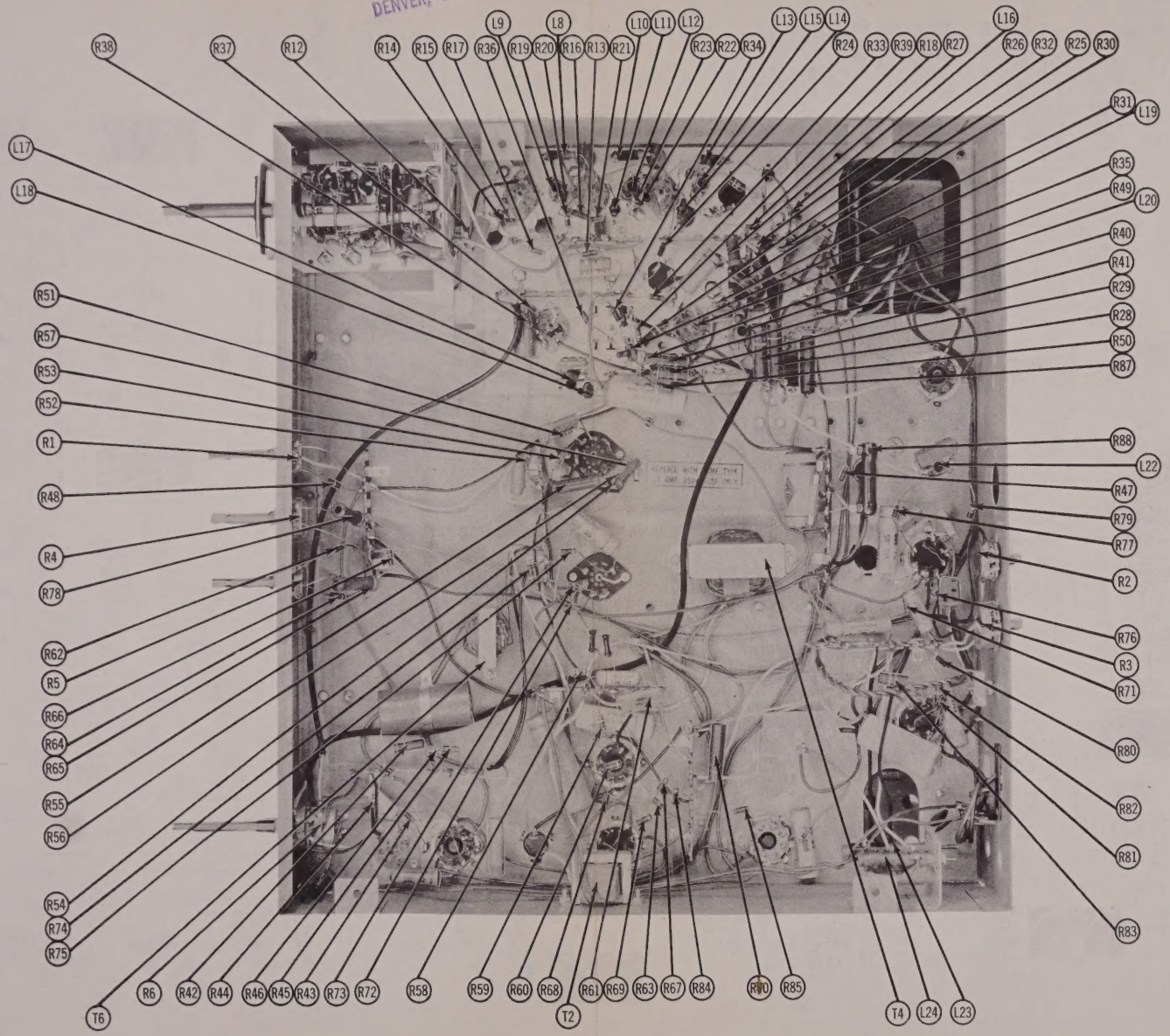
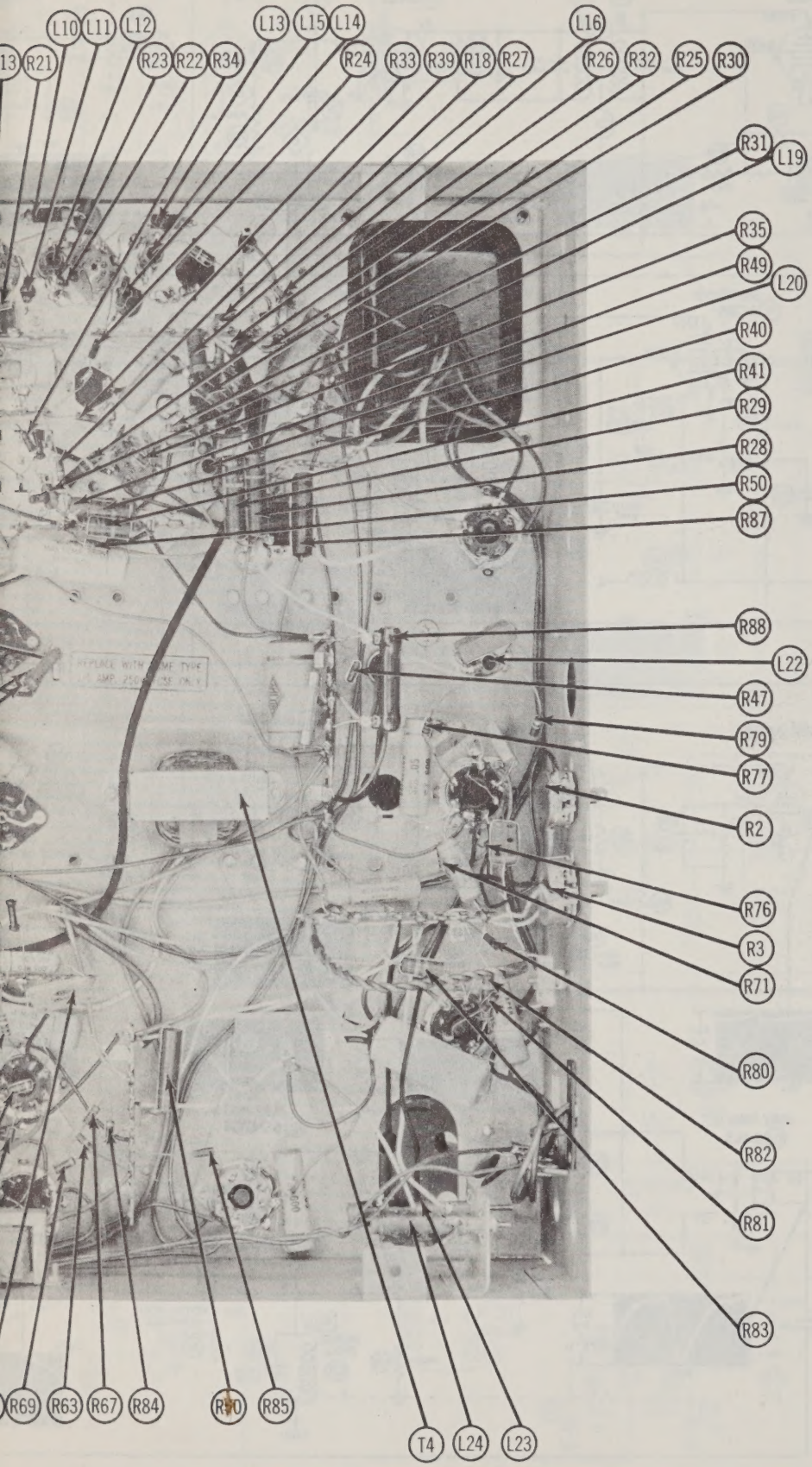
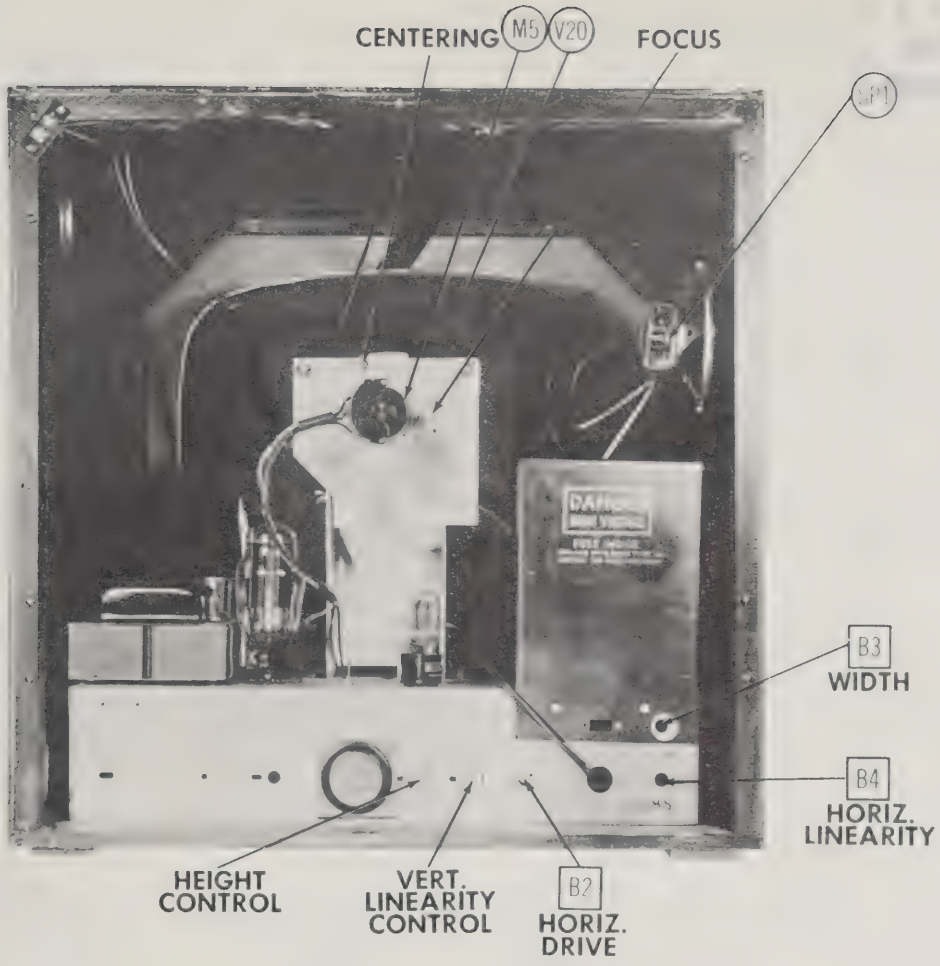


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



R AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug, (B1), to the center of the range over which the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise as far as possible without crowding or bright vertical lines appearing in the picture.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

Since both width and horizontal linearity are effected by the drive trimmer, it may be necessary to adjust them alternately for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push-on type control knobs from front panel.
2. Remove 7 wood screws from rear cover. Remove cover.
3. Disconnect speaker and built-in antenna.
4. Remove 2 wood screws holding built-in antenna bracket.
5. Remove 2 nuts holding speaker. Remove speaker.
6. Remove wood screw and brace from picture tube to top of cabinet.
7. Remove 4 chassis bolts. Remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6AC7	6AC7	8N	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9A	AF Amplifier	6AV6	6AV6	7BT	
B	AF Amplifier	6SQ7	6SQ7	8Q	
V10	Audio Output	6V6GT	6V6GT	7AC	
V11	Sync. Amplifier Sync. Clipper	12AU7	12AU7	9A	
V12	Sync. Phase Inv. Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V13	Vert. Output	6SN7GT	6SN7GT	8BD	
V14	Horiz. Phase Det.	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6BG6G	6BG6G	5BT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: SYLVANIA		RTMA BASE TYPE	NOTES
V20	17BP4A	17BP4A		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	CLA-10039A	AFH3-44		UPT44445		TVL-3787	■ Filter
B	40	450							■ Filter
C	40	450							▲ Filter
C2A	20	450	CLC-10070	AFE3-156		UPT1150V10		TVL-1714	■ Vert. Output Dec.
B	100	25						TVA-1207	▲ Vert. Output Cathode
C3A	40	350	CLC-10074	AFE3-28		UP4035		TVL-1725	■ Decoupling
B	10	250				BR1225A		TVA-1504	▲ Video Amp. Screen
C4	50	350	CLA-10087A	PRS450/40		BR4035		TVA-1613	Audio Output Dec.
C5	4	50	CLA-10027	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C6	15			SII5	D6-150		GP1K-150	5GA-Q15	RF Coupling
C7	500			SII500	D6-501	TM5T5	GP2K-501	5GA-T5	▲ AGC Filter
C8	470			SI470	D6-471		GP2K-471	5GA-T47	RF Amp. Plate Dec.
C9	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	RF Amp. Screen Bypass
C10	2.2				TCZ-2.2		N90K-2R2		RF Coupling
C11	1.8						N90K-1R8		RF Coupling
C12	1.8						N90K-1R8		RF Coupling
C13	470			SI470	D6-471		GP2K-471	5GA-T47	Mixer Grid Filter
C14	.7						N90K-R70		Osc. Coupling
C15	10			SII0N750	TCN-10		N750K-100	5TCU-Q1	Osc. Grid Cap.
C16	3.3						N330K-3R3		Osc. Feedback
C17	500			SI500	D6-501	TM5T5	GP2K-501	5GA-T5	Conv. Fil.
C18	10			SII0NT50	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C19A	[illegible]		} BPD-2X001	DD-2-102	TM5DD1	812-001	}	5HK-2D1	Fil. Bypass
B	[illegible]								RF Bypass
C20	68	500		1469-00007	D6-680	SR5Q7	GP1K-680	MS-47	IF Coupling
C21	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C22	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Dec.
C23	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Fil.
C24	68	500		1469-00007	D6-680	SR5Q7	GP1K-680	MS-47	IF Coupling
C25	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	AGC Filter
C26	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Dec.
C27	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Fil.
C28	68	500		1469-00007	D6-680	SR5Q7	GP1K-680	MS-47	IF Coupling
C29	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C30	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Cathode
C31	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Fil.
C32	68	500		1469-00007	D6-680	SR5Q7	GP1K-680	MS-47	IF Coupling
C33	10			SII0	D6-100	SW5Q1	GP1K-100	5GA-Q1	Fixed Trimmer
C34	5			SI5	TCZ-4.7	SW5V5	GP1K-050	MS-55	Video Det. Filter
C35	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C36	[illegible]			SI680	D6-681		GP2K-681	5GA-T68	Video Output Cathode
C37	39	500		1469-00004		SR5Q4		MS-44	Fixed Trimmer
C38	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C39	5			SI5	TCZ-4.7	SW5V5	GP1K-050	MS-55	Sound IF Coupling
C40	39	500		1469-00004		SR5Q4		MS-44	Fixed Trimmer
C41	39	500		1468-00004	D6-390	SW5Q4	GP1K-390	1FM-44	Sound IF Coupling
C42	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Sound IF Plate Dec.
C43	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Screen
C44	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Sound IF Cathode
C45	3			SI3NP0			N90K-030		Balancing Cap.
C46	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Bypass
C47	3900			SI4000	D6-402	TM5D4	GP2-333-402		De-emphasis
C48	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C49	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C50	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C51	5000			SI5000	D6-502	TM5D5	GP2-333-502	5HK-D5	Sync. Coupling
C52	220	500		1468-00025	D6-221	SW5T25	GP2K-221	1FM-325	Sync. Coupling
C53	.05	600		P688-05	DF-503	PTE6S5		6TM-D5	Sync. Coupling
C54	2000			SI2000	D6-202	TM5D2	GP2-333-202	5HK-D2	Sync. Clipper Grid
C55A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005			P688-005	*PC-100	PTE6D5	GP2-333-502	*, 101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid Cap.
C57	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Discharge
C58	.25	600		684-25		PTE6P25		6TM-P25	Vert. Sweep Coupling
C59	1000			SII000	D6-102	TM5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C60	1000			SII000	D6-102	TM5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C61	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback
C62	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. AFC Coupling
C63	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. MV Grid
C64	3900	500		1464-004		1DR5D4			Fixed Trimmer
C65	270	500		1469-0003		5R5T3		MS-33	Horiz. MV Feedback
C66	430	500							Horiz. Discharge
C67	220	500		1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Horiz. Sweep Coupling
C68	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C69	.25	600		684-25		PTE6P25		6TM-P25	Horiz. Output Cathode
C70	.25	600		684-25		PTE6P25		6TM-P25	Horiz. Sweep Coupling
C71	.05	600		P688-05		PTE6S5		6TM-S5	Damper Filter
C72	.035	600							Damper Filter
C73	500	20000	CCXA-10001A	HV20C	TV3-502	MM-B20T5			HV Filter
C74	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Line Filter
C75	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Line Filter

* Items C55A, C55B, C55C, R61A, R61B, R61C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	100KΩ	½	VC-12130	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions
R2A	2.5Meg	½	VC-12121C	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R2A per instructions
R3A	5KΩ	½	VC-12120B	Q11-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R3A per instructions
R4A	50KΩ	½	VC-12131	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R4A per instructions
R5A	1.3Meg	½	VC-12132B	Q11-138	AG-83-S	AN-69	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R5A per instructions
R6A	750Ω	½ }	VC-12127B	QJ-246 *	RTV297	3BBT-682-S	Contrast Control - Tapped @ 500Ω - Panel
B	250KΩ	½ }					Volume Control & SW - Rear

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS AND SHAFTS B17-105X and P1-210 (Panel) B13-130 and R2-226 (Rear) and SWITCH 76-1.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ± 20% UNLESS OTHERWISE NOTED
R7	2200Ω	½		BTS-2200	RF Amp. Grid
R8	1800Ω 10%	½		BTS-1800	RF Amp. Decoupling
R9	220KΩ 10%	½		BTS-220K	Mixer Grid
R10	4700Ω 10%	½		BTS-4700	Osc. Plate
R11	15KΩ	½		BTS-15K	Osc. Grid
R12	470Ω	½		BTS-470	Decoupling
R13	100Ω	½		BTS-100	Decoupling
R14	22KΩ 10%	½			1st Video IF Amp. Grid
R15	82Ω	½		BTS-82	1st Video IF Amp. Cathode
R16	100Ω	½		BTS-100	1st Video IF Amp. Decoupling
R17	470Ω	½		BTS-470	AGC Network
R18	1Meg	½		BTS-1Meg	AGC Network
R19	22KΩ 10%	½			2nd Video IF Amp. Grid
R20	180Ω 10%	½		BTS-180	2nd Video IF Amp. Cathode
R21	100Ω	½		BTS-100	2nd Video IF Amp. Decoupling
R22	3300Ω	½		BTS-3300	3rd Video IF Amp. Grid
R23	180Ω	½		BTS-180	3rd Video IF Amp. Cathode
R24	100Ω	½		BTS-100	3rd Video IF Amp. Decoupling
R25	8200Ω 10%	½		BTS-8200	Video Det. Diode Load
R26	1Meg	½		BTS-1Meg	Video Output Grid
R27	100Ω	½		BTS-100	Video Output Cathode
R28	47KΩ	2		BTB-47K	Video Output Screen
R29	47KΩ	2		BTB-47K	Video Output Screen
R30	22KΩ	1		BTA-22K	Voltage Divider
R31	47KΩ	½			Sound IF Amp. Grid
R32	39KΩ	1			Sound IF Amp. Screen
R33	1000Ω	½		BTS-1000	Sound IF Amp. Cathode
R34	1000Ω	½		BTS-1000	Sound IF Amp. Decoupling
R35	12KΩ	½		BTS-12K	Voltage Divider
R36	15KΩ	½			De-emphasis
R37	6800Ω 10%	½		BTS-6800	Ratio Det. Diode Load
R38	6800Ω 10%	½		BTS-6800	Ratio Det. Diode Load
R39	10KΩ 10%	½		BTS-10K	Video Output Plate
R40	22KΩ	2		BTB-22K	Video Output Plate
R41	22KΩ	2		BTB-22K	Video Output Plate
R42	390Ω	½		BTA-390	Decoupling
R43	6.8Meg	½		BTS-6.8Meg	AF Amp. Grid
R44	330KΩ	½		BTS-330K	AF Amp. Plate
R45	180KΩ 5%	½		BTS-180K 5%	Output Grid
R46	330KΩ 5%	½		BTS-330K 5%	Bias Network
R47	1000Ω	½		BTS-1000	ACC Anode Load
R48	220KΩ	½		BTS-220K	Voltage Divider
R49	270KΩ	½		BTS-270K	Picture Tube Cathode
R50	18KΩ	½		BTS-18K	Isolation
R51	470KΩ	½		BTS-470K	Sync. Amp. Grid
R52	2.2Meg 10%	½		BTS-2.2Meg	Sync. Amp. Grid
R53	12KΩ	½		BTS-12K	Sync. Amp. Plate
R54	47KΩ	½		BTS-47K	Sync. Clipper Cathode
R55	100KΩ	½		BTS-100K	Sync. Clipper Plate
R56	47KΩ	½		BTS-47K	Sync. Clipper Grid
R57	33KΩ	½		BTS-33K	Voltage Divider
R58	3900Ω 10%	½		BTS-3900	Sync. Phase Inverter Plate

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R59	[illegible] 10%	½		BTS-3900	Sync. Phase Inverter Plate
R60	2700Ω 10%	½		BTS-2700	Sync. Phase Inverter Cathode
R61A	22KΩ	½		BTS-22K	Integrator Network
B	8200	½		BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R62	1.2Meg	½		BTS-1.2Meg	Vert. Osc. Grid
R63	[illegible]	½		BTS-100k	Vert. Osc. Grid
R64	6.8Meg 10%	½		BTS-6.8Meg	Voltage Divider
R65	100KΩ	½		BTS-100K	Voltage Divider
R66	680KΩ	½		BTS-680K	Vert. Osc. Plate
R67	3300Ω	½		BTS-3300	Picture Tube Grid
R68	2.2Meg	½		BTS-2.2Meg	Vert. Output Grid
R69	560Ω 10%	½		BTS-560	Vert. Output Cathode
R70	[illegible]	2		BTB-5600	Vert. Output Decoupling
R71	470KΩ	½		BTS-470K	Horiz. AFC Filter
R72	100KΩ	½		BTS-100K	Horiz. Phase Det. Diode Load
R73	100KΩ	½		BTS-100K	Horiz. Phase Det. Diode Load
R74	6.8Meg	½		BTS-6.8Meg	Horiz. Phase Det. Diode Load
R75	200Ω 5%	½		BTS-200 5%	Horiz. Feedback
R76	1500Ω	½		BTS-1500	Horiz. Osc. Cathode
R77	5600Ω 10%	½		BTS-5600	Horiz. Osc. Plate
R78	100KΩ	½		BTS-100K	Horiz. Discharge Grid
R79	220KΩ 10%	½		BTS-220K	Horiz. Discharge Plate
R80	1Meg	½		BTS-1Meg	Horiz. Output Grid
R81	68Ω	½			Parasitic Suppressor
R82	68Ω	½			Horiz. Output Cathode
R83	6800Ω	2		BTB-6800	Horiz. Output Screen
R84	75Ω 5%	½			Horiz. Linearity Coil Shunt
R85	2200Ω	3		BTS-2200	Horiz. Linearity Coil Shunt
R86	1Meg 10%	½			HV Filter
R87	82Ω	1			Filter
R88	200Ω	10		1 3/4A-200	Filter - Wire Wound
R89	80Ω	1			HV Rectifier Filament
R90	15KΩ	½		BTS-15K	Mixer Plate

* Items R61A, R61B, R61C, C55A, C55B, C55C are combined in one unit

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 1.6A	720VCT .180ADC	5VAC @ 3.0A	6.3VAC @ 6.5A Sec. 4 6.3VAC @ 2.0A	TPC-10005B	P-8165	P-3070	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	175Ω	950Ω	TOA-10051A	A-8111 ①	A-3000 ①	TBO-3 ②	Vert. Oscillator Trans.
T3	450Ω Tapped @ 60Ω	12.5Ω Tapped @ .5Ω & 9Ω Sec. 2 0Ω	THC-10000A		HVO-7 ③ MWC-1		Horiz. Output Trans.
T4	1KΩ Tapped @ 12Ω		TOB-10045E	A-8123	A-3037		Vert. Output Trans.
T5A	15Ω		YDB-10000	DY-9	MDF-70		Horiz. Deflection Coils
B	60Ω						Vert. Deflection Coils

① Drill one new mounting hole.
② Mount on top of chassis.
③ Replace width coil with MWC-1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	3.8KΩ	3.6Ω	335Ω	.6Ω	TOC-10034	A-3850 ①	A-3026	RO-302 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1A	PM	3.6Ω	SRC-10026	ST-105 Mod. P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP1B	4½"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Ambassador PART No.	MERIT PART No.	
L1	Ant. Coil	0Ω	0Ω			
L2	Ant. Coil	0Ω	0Ω			
L3	RF Coil	0Ω				
L4	Mixer Grid Coil	0Ω				
L5	Osc. Coil	0Ω				Channel 6
L6	Osc. Coil	0Ω				Channel 13
L7	1st Video IF	.4Ω				
L8	Fil. Choke	0Ω				
L9	2nd Video IF	.1Ω		TV-102		
L10	Fil. Choke	0Ω				
L11	RF Choke	3.6Ω		TV-180		
L12	3rd Video IF	.1Ω		TV-103		
L13	Fil. Choke	0Ω				
L14	RF Choke	3.6Ω				
L15	4th Video IF	.1Ω		TV-112		
L16	Peaking Coil	7.1Ω		TV-184		180Microhenries
L17	4.5MC Trap	2Ω		TV-151		
L18	Peaking Coil	8Ω		TV-184 *		Wound on 8.2KΩ resistor, 150Microhenries
L19	Peaking Coil	12.4Ω		TV-185		300Microhenries
L20	Sound IF	2.4Ω		TV-151		
L21	Ratio Det. Trans.	4.2Ω	.1Ω	TV-110		Tap @ .5Ω
L22	Horiz. Osc.	55Ω		TV-163		
L23	Width Coil	.45				
L24	Horiz. Lin.	38Ω				

* Parallel with 8.2K Resistor

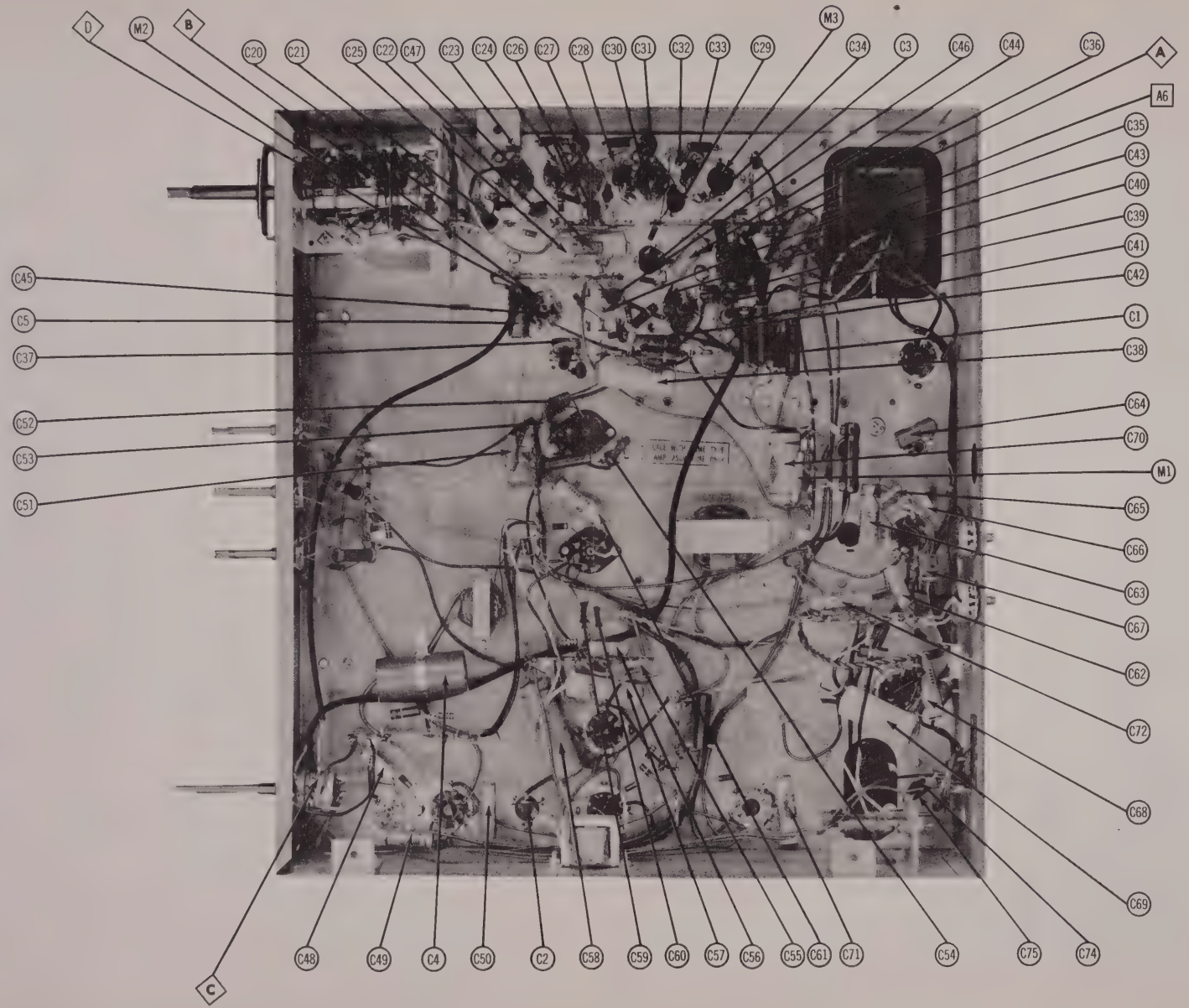
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			AMBASSADOR PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Pigtail	1/4 amp. 250V	FA10001		318.250		GJV 1/4		

MISCELLANEOUS

ITEM No.	PART NAME	Ambassador PART No.	NOTES
M2	RF Tuner	TTA-10007	
M3	Crystal	GD-10000	IN64 (Video Det.)
M4	Focus Magnet	FCB-10005	
M5	Ion Trap	ITA-10002	
B2	Trimmer	CT-10005	Horiz. Drive (25-280MMF)
	Knob	KA-10085	Fine Tuning
	Knob	KA-10118A	Channel Selector
	Knob	KA-10087A	Off/On Volume
	Knob	KA-10086	Contrast
	Knob	KA-10117	Vert. & Horiz. Hold, Brightness

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

BOTTOM VIEW

TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	23.3MC (unmod)	Any	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal gen. to maintain 2.5 to 3 volt reading.
2.	"	"	25.7MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.6MC 22.5MC 26.1MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to pin 4, (grid) of 6AC7, (V6). Low side to chassis.	4.5MC (unmod)	Any	DC probe to point (B). Common to chassis.	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to point (C). Common to point (D).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequnecy modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to pin 4, (grid) of 6AC7, (V6). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A5, A6	Disconnect stabilizor capacitor C5. Adjust for maximum amplitude and symmetry as per fig. 2.
5.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A7	Reconnect capacitor C5. Adjust A7 so 4.5 MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

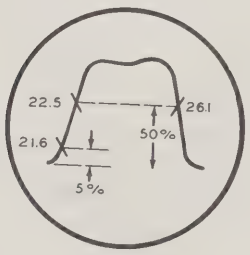


FIG. 1

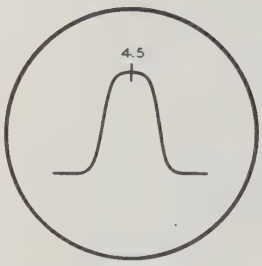


FIG. 2

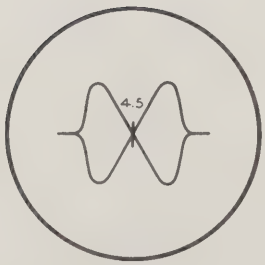


FIG. 3

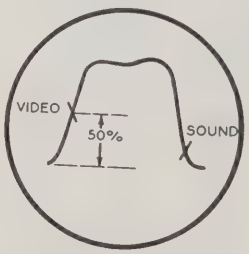


FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A) Low side to chassis.	A8	Adjust to place video markers at 50% on response curve as shown in fig. 4.
7.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check all high band channels to see if the markers can be properly placed well within the range of the fine tuning control. If not, make compromise adjustment of A8.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
8.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A9	Adjust to place video marker at 50% on response curve as shown in fig. 4.
9.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check all low band channels to see if the markers can be properly placed well within the range of the fine tuning control. If not, make compromise adjustment of A9.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

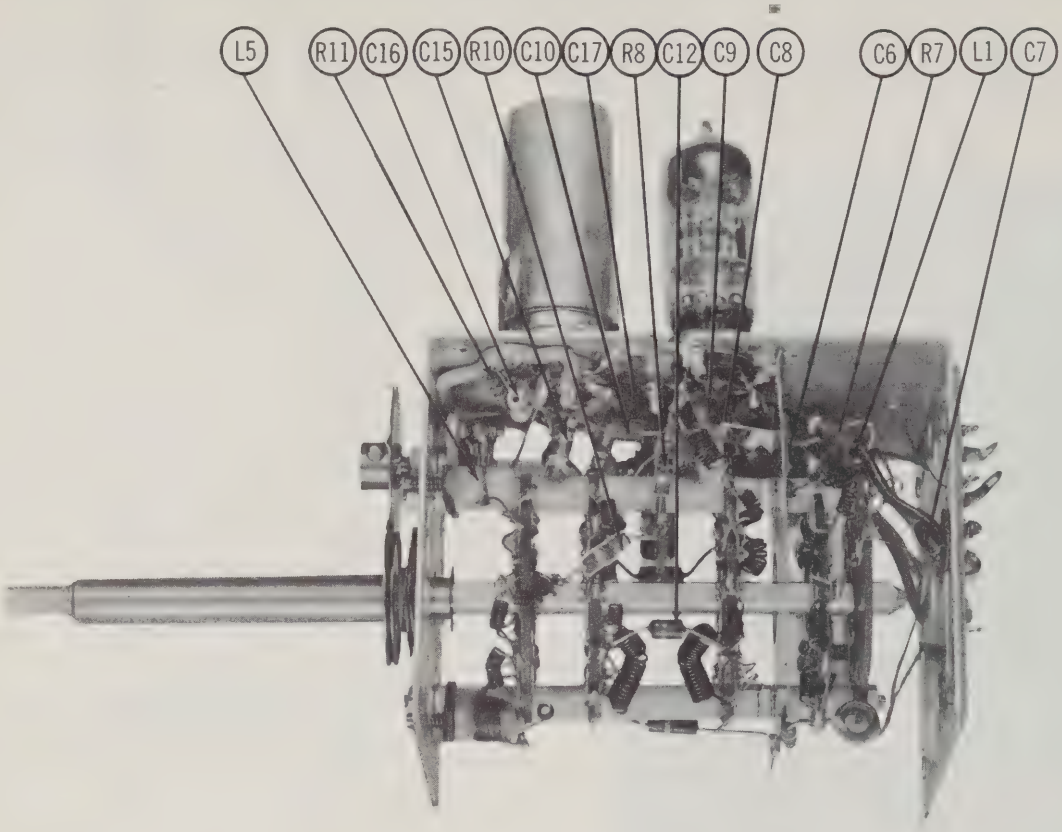
4.5MC TRAP ADJUSTMENT

After the alignment is completed and set restored to original operation turn the set on and tune in a TV station.
Adjust the fine tuning control until sound just begins to appear in the picture.
If evidence of 4.5MC interference, (grain appearance in horizontal lines) is present, adjust A10 until the interference is eliminated or minimized.

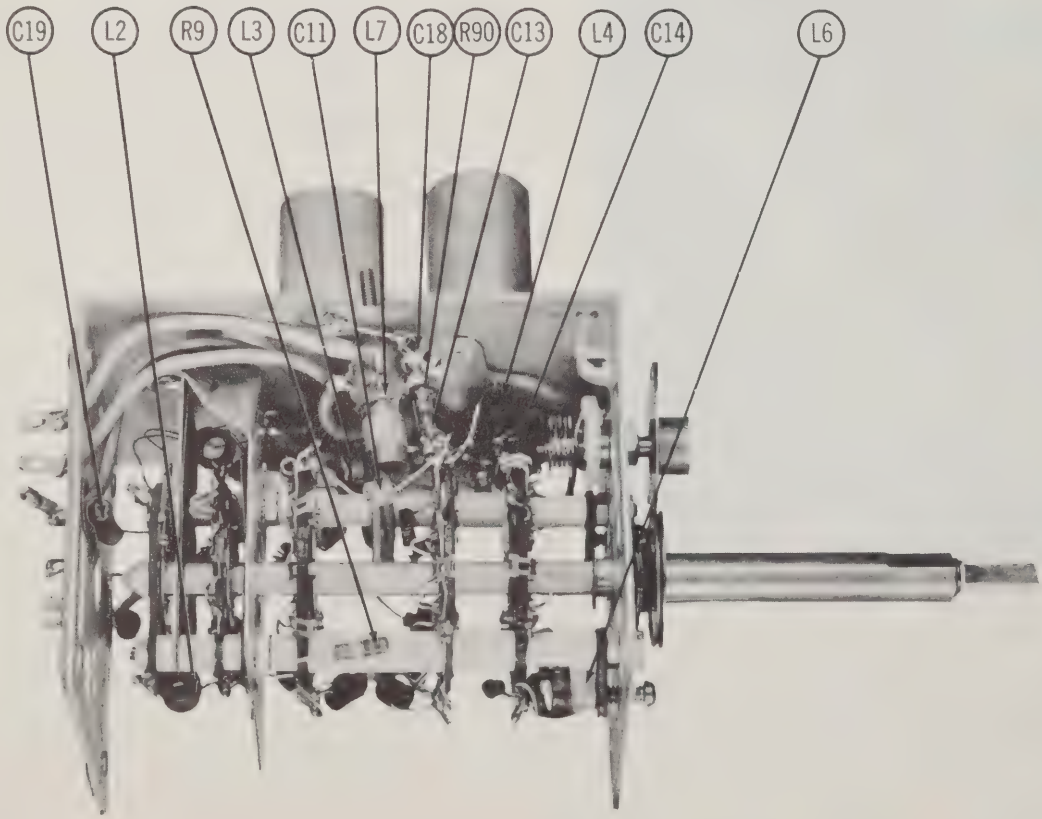
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1Meg	0Ω	0Ω	.1Ω	■2.4KΩ	■2.4KΩ	0Ω		
V 2	6J6	■5.2KΩ	■15KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6AU6	1Meg	0Ω	0Ω	.1Ω	■100Ω	■100Ω	82Ω		
V 4	6CB6	1Meg	180Ω	0Ω	.1Ω	■100Ω	■100Ω	0Ω		
V 5	6CB6	.1Ω	180Ω	0Ω	.1Ω	■100Ω	■100Ω	0Ω		
V 6	6AC7	0Ω	0Ω	420Ω	1Meg	420Ω	†12KΩ	.1Ω	■7KΩ	
V 7	6AU6	■48KΩ	■1KΩ	■0Ω	■.1Ω	†1.3KΩ	†16KΩ	■1KΩ		
V 8	6AL5	265KΩ	265KΩ	.1Ω	0Ω	0Ω	INF	13KΩ		
V 9	6AV6	6.8Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 10	6V6GT	INF	■.1Ω	†1KΩ	†675Ω	180KΩ	INF	■0Ω	30KΩ	
V 11	12AU7	24KΩ	47KΩ	47KΩ	.1Ω	.1Ω	■12KΩ	2.7Meg	0Ω	0Ω
V 12	6SN7GT	24KΩ	■7.8KΩ	2.7KΩ	2.5Meg	#1.6Meg	0Ω	.1Ω	0Ω	
V 13	6SN7GT	2.2Meg	#6KΩ	1.8KΩ	2.2Meg	#6KΩ	1.8KΩ	.1Ω	0Ω	
V 14	6AL5	6.9Meg	6.9Meg	.1Ω	0Ω	200Ω	INF	200Ω		
V 15	6SN7GT	7.2Meg	†5.9KΩ	1.5KΩ	125KΩ	†220KΩ	1.5KΩ	0Ω	.1Ω	
V 16	6BG6G	INF	0Ω	68Ω	INF	1Meg	INF	.1Ω	†7.1KΩ	TOP CAP #100Ω
V 17	6W4GT	INF	INF	220KΩ	INF	†295Ω	INF	■0Ω	■.1Ω	
V 18	1B3GT	PINS 1 THRU 8 HAVE INF RESISTANCE								TOP CAP #485Ω
V 19	5U4G	INF	24KΩ	INF	42Ω	INF	45Ω	INF	24KΩ	
V 20	17BP4A	0Ω	5.1KΩ	PIN 10 †1.3KΩ	PIN 11 320KΩ	PIN 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V19
# MEASURED FROM PIN 3 OF V17
■ MEASURED FROM 125 VDC LINE



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ARTHUR ANSLEY
MODEL TP-1

ARTHUR ANSLEY
MODEL TP-1

TRADE NAME	Arthur Ansley Model TP-1
MANUFACTURER	Arthur Ansley Mfg. Co., Doylestown, Penn.
TYPE SET	AC Operated 2 Channel Audio Amplifier With 3 Speed Manual Record Player
TUBES (SIX)	Types 6AV6 Mic Pre Amp., 6AU6 AF Amp., 6C4 Phase Inv., (2) 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .500 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ARTHUR ANSLEY
MODEL TP-1

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ANSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic. Preamp	6AV6	6AV6	7BT	
V2	AF Amplifier	6AU6	6AU6	7BK	
V3	Phase Inverter	6C4	6C4	6BG	
V4	Audio Output	6AQ5	6AQ5	7BZ	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450		AFH2-51		UP2245		TVL-2755	■ Filter
B	20	450							▲ Filter
C2	4	450		PRS450/4		BR445		TVA-1702	Decoupling
C3	25	25		PRS25/25		BR252A		TVA-1205	Audio Output Cathode *
C4	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C5	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C6	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	AF Amp. Screen Bypass
C7	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C8	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C9A	.01		♦		PC-80				Audio Coupling
B	250		♦		PC-80				AF Amp. Plate Bypass
C			♦		PC-80				Audio Output Grid
C10	.0068	200		P488-0068		PTE6D68		6TM-D68	Line Filter

* Not used in all models
♦ Items C9A, C9B, C9C, R13A, R13B are combined in one unit.
When replacing items separately, C9B, C9C should total 250MMF

CONTROLS

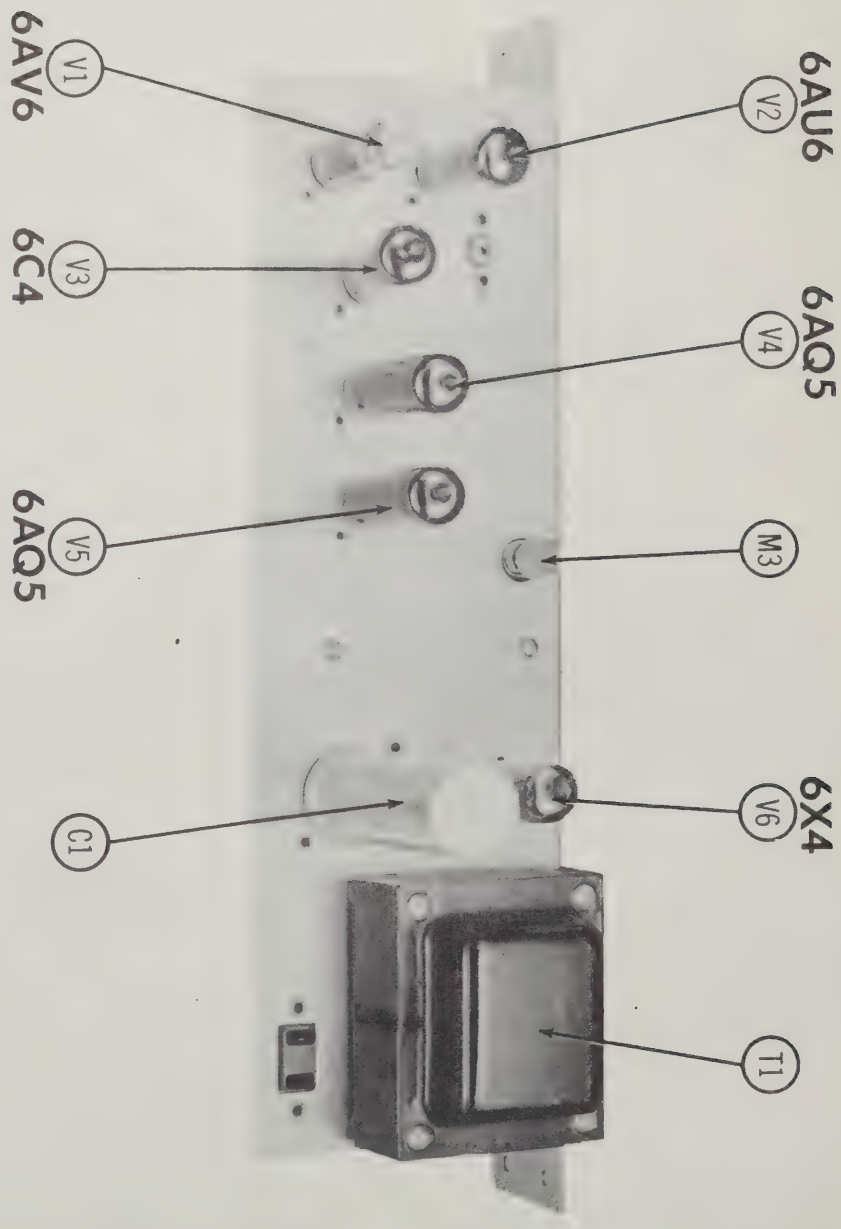
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	CM9682	Q13-137	AG-63-Z	B-70	Volume Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R1A per instructions
R2A	100KΩ	½	CM9681	Q13-128	AG-51-Z	B-41-S	Tone Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R2A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R2A per instructions
R3A	1Meg	½	CM9682	Q13-137	AG-63-Z	B-70	Microphone Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANSLEY PART No.	IRC PART No.	IDENTIFICATION CODES
R4	2.2Meg	½		BTS-2.2Meg	Mic. Pre-amp. Grid
R5	270KΩ	½		BTS-270K	Mic. Pre-amp. GrPlate
R6	270KΩ	½		BTS-270K	Series Phono
R7	10Meg	½		BTS-10Meg	AF Amp. Grid
R8	1Meg	1		BTS-1Meg	AF Amp. Screen
R9	510KΩ	½			AF Amp. Plate
R10	36KΩ	½			Phase Inverter Grid-See Note 1
R11	36KΩ	½			Phase Inverter Grid-See Note 2
R12	1000Ω	½		BTS-1000	Phase Inverter Cathode
R13A	500KΩ	½	♦		Phase Inverter Plate
B	250KΩ	½	♦		Output Grid
R14	4700Ω	1		BTA-4700	Decoupling
R15	250Ω	5		1 3/4A-250	Output Cathode
R16	220KΩ	½		BTS-220K	Output Grid
R17	2.2Meg	½		BTS-2.2Meg	Feedback Network -See Note 3
R18	68Ω	1			Surge Limiter
R19	650Ω	5		1 3/4A-700	Filter

Note 1. Some models use a 16.5K resistor in this application.
Note 2. Not used in all models.
Note 3. 2.2Meg resistor used for crystal pick-up, 10Meg resistor used for ceramic pick-up.
♦ Items R13A, R13B, C9A, C9B and C9C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ANSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC② .500A	575VCT② .070ADC	6VAC② 2.3A			PM-8403	P-3051	PV-70A ①

① Drill new mtg. holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ANSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6.5KΩ CT	3.3Ω	330Ω CT	.6Ω			A-2936	RO-110	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	ANSLEY PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.3Ω				
	CONE DIA.	V. C. DIA.				
SP1B	8"	9/16"				

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	ANSLEY PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		ACD-1J *400D	A-1 A-3	W22AB-T	A65MG A62A	96-T	0-1 or S-1 & 0-3 or S-3	* Complete tone arm and cart. assembly

PHONO NEEDLE

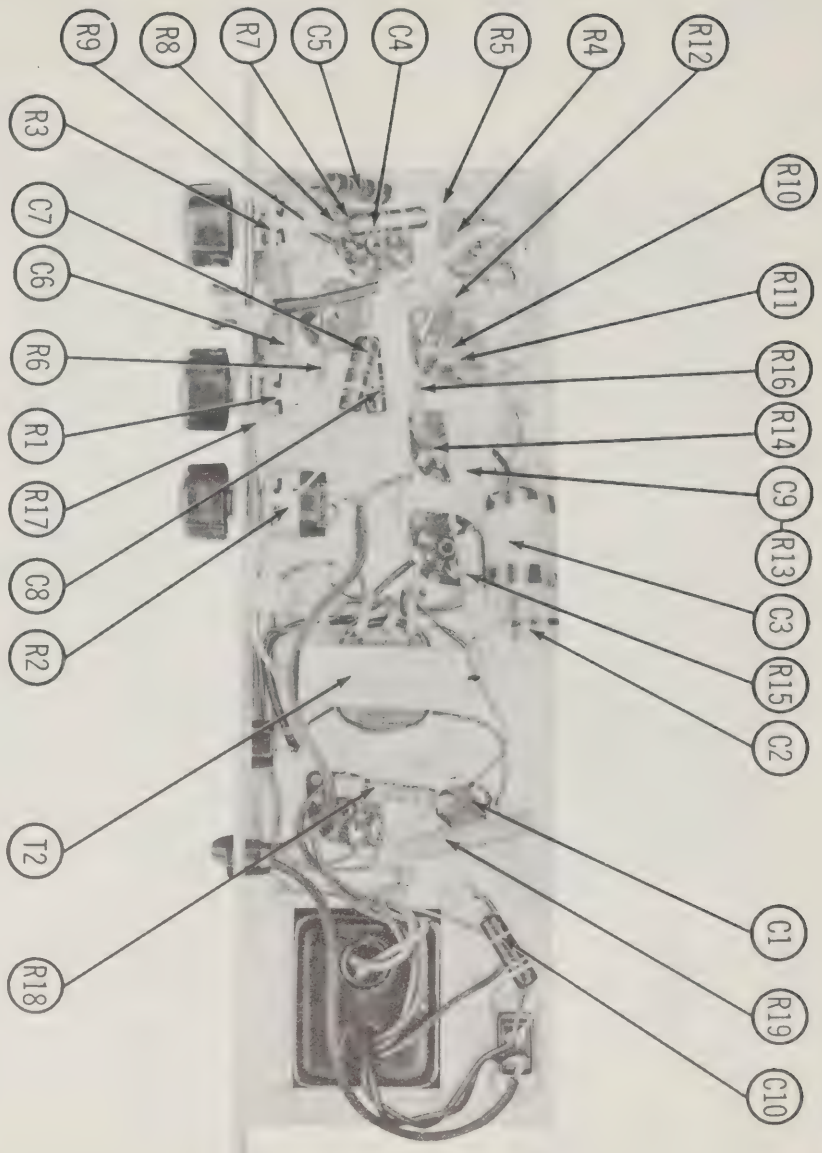
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	ANSLEY PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-5MGA or W5MGS & W-5A or W-5S	A75 or A85 & A75LP or A85LP	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ANSLEY PART No.		
M3	Bayonet	6-8	.15	Brown			Type #47

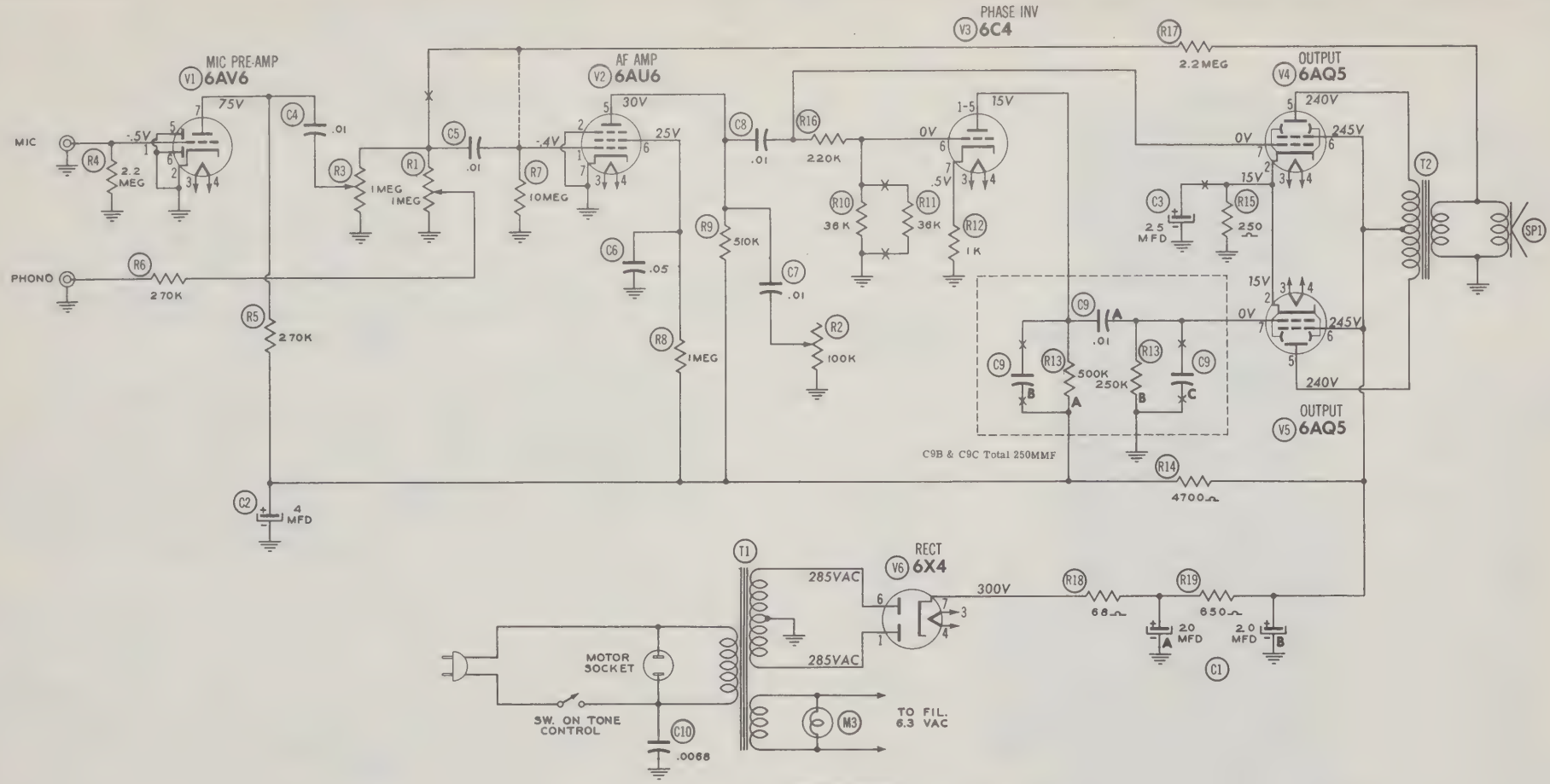
CHASSIS—BOTTOM VIEW



SET 173 FOLDER 3

ARTHUR ANSLEY MODEL TP-1

ARTHUR ANSLEY MODEL TP-1



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6AV6	2.2Meg	0Ω	.2Ω	0Ω	0Ω	0Ω	†275KΩ
V 2	6AU6	10Meg	0Ω	.2Ω	0Ω	†510KΩ	†1Meg	0Ω
V 3	6C4	†500KΩ	INF	.2Ω	0Ω	†500KΩ	18KΩ	1KΩ
V 4	6AQ5	238KΩ	250Ω	.2Ω	0Ω	†875Ω	†718Ω	238KΩ
V 5	6AQ5	250KΩ	250Ω	.2Ω	0Ω	†875Ω	†718Ω	250KΩ
V 6	6X4	200Ω	INF	.2Ω	0Ω	INF	190Ω	25KΩ

† MEASURED FROM PIN 7 OF V6

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

AUTOMATIC
MODEL P-651

AUTOMATIC
MODEL P-651

TRADE NAME	Automatic Model P-651 (For 1951 Plymouth Automobiles)
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 or 6AV6 Det.-AVC-AF Amp., 6V6GT or 6AQ5 Audio Output, 6X5GT or 6X4 Rectifier.
POWER SUPPLY	6 Volt Storage Battery RATING 5.6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the tuning gang fully open and set the right hand edge of the pointer saddle 1/4 inch from the right hand end of the dial back plate.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400∿mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	100MMF	High side to antenna terminal. Low side to chassis.	1600KC	"	"	A5	"
3.	"	"	1400KC	Tune to 1400KC signal	"	A6, A7	"
4.	"	"	600KC	Tune to 600KC signal.	"	A8, A9, A10	"

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PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @3A	430VCT @.046 ADC			TV-100		P-2971	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	4.5KΩ	3.4Ω	465Ω	.6Ω	Part of Spkr.	A-3856 ①	A-2930 ①	R0-8 ①	① Bend mtg. tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AUTOMATIC PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.4Ω	PM-720 PM-705 ①		52A1	
	CONE DIA.	V. C. DIA.				
SP1B	5"	9/16"				

① Alternate Speaker

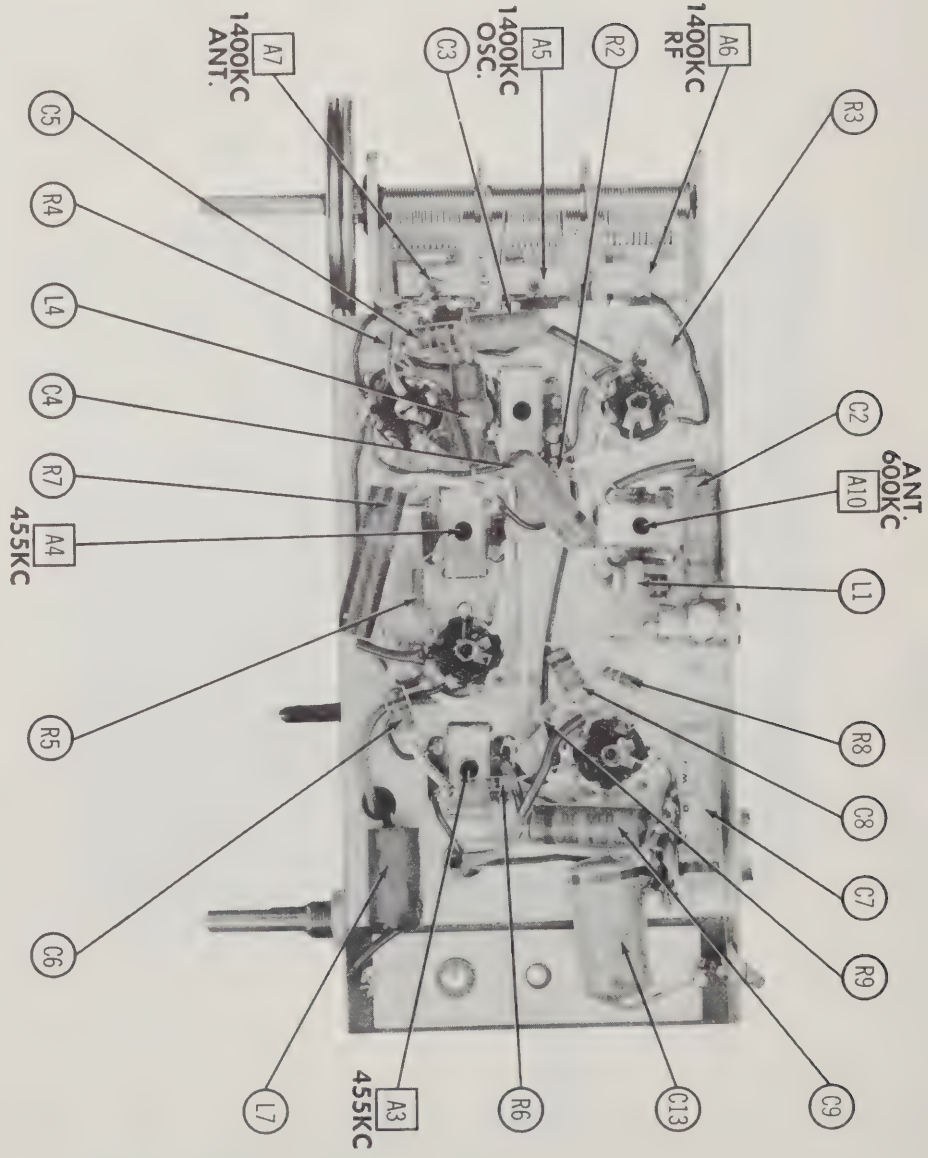
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AUTOMATIC PART No.	MERIT PART No.	
L1	Ant. Hash Choke	1.4Ω		L200		Wound on Capacitor
L2	Ant. Coil	14Ω	5Ω	57FB-3		Alternate Part #15053
L3	RF Coil	14Ω	5Ω	57FB-3		Alternate Part #15054
L4	Osc. Coil	8.6		L201		Tap @ .8Ω
L5	Input IF	20Ω	20Ω	1655-16	BC-352	Alternate Part #14977
L6	Output IF	20Ω	20Ω	1655-16	BC-353	Alternate Part #14977 7
L7	Fil. Choke	0Ω		L203		
L8	Hash Choke	0Ω		L202		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				AUTOMATIC PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int	6.3 VDC	115v	V-83	5301	5301	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4A	Det.-AVC-AF Amp.	6AT6	6AT6	7BT	
B	Det.-AVC-AF Amp.	6AV6	6AV6	7BT	
V5A	Audio Output	6V6GT	6V6GT	7S	
B	Audio Output	6AQ5	6AQ5	7BZ	
V6A	Rectifier	6X5GT	6X5GT	6S	
B	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350	CE-86	AFH3-107		UP2235C		TVL-3678	■ Filter
B	20	350							▲ Filter
C	20	25							Audio Output Cathode
C2	.05	200	C207	P288-05	DF-503	PJ285		2TM-S5	AVC Filter
C3	.05	200	C207	P288-05	DF-503	PJ285		2TM-S5	Screen Bypass
C4	.05	200	C207	P288-05	DF-503	PJ285		2TM-S5	AVC Filter
C5	100		CC200	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Osc. Grid Cap.
C6	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	Diode RF Filter †
C7	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling ¶
C8	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Plate Bypass †
C9	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C10	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C11	.008	1600	C205			PTE16D8		MB-D8	Buffer Cap.
C12	.5	100	C209	P185-5		MP2P5		68P20	Hash Filter
C13	.5	100	C209	P185-5		MP2P5		68P20	Hash Filter

† Some Models use 200MMF in this application (Part No. CC201)
¶ Some Models use .002MFD in this application (Part No. C203)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	RV-651	Q13-137	AG-63-Z	B-70-S	Volume Control - See Note
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

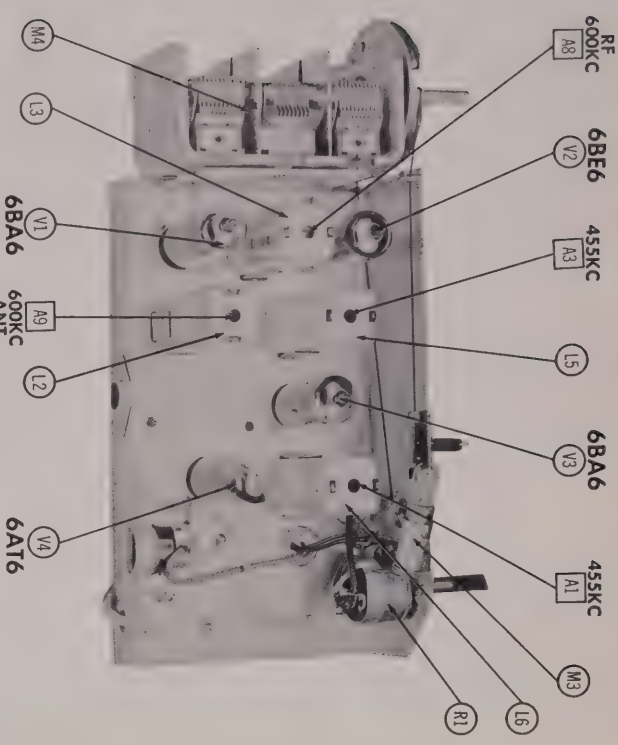
Note. Some Models use 750KΩ Control (Part #RV-100)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1.2Meg	½		BTS-1.2Meg	AVC Network - See Note 1
R3	330Ω	½	R303	BTS-330	RF Amp. Cathode
R4	20KΩ	½	R306		Osc. Grid
R5	1800Ω	½		BTS-1800	IF Amp. Cathode - See Note 2
R6	20KΩ	2	R313		Screen Dropping
R7	2Meg	½	R310		Diode Filter
R8	8.2Meg	½		BTS-8.2Meg	AF Amp. Grid - See Note 3
R9	250KΩ	½	R307		AF Amp. Plate
R10	560KΩ	½		BTS-560K	Output Grid - See Note 4
R11	330Ω	½	R303	BTS-330	Output Plate
R12	1000Ω	1	R312	BTA-1000	Filter
R13	100Ω	½	R301	BTS-100	Hash Suppression
R14	100Ω	½	R301	BTS-100	Hash Suppression

Note 1. Some Models use a 1Meg Resistor in this application
Note 2. Some Models use a 1500 Ω Resistor in this application
Note 3. Some Models use a 10Meg Resistor in this application
Note 4. Some Models use a 500KΩ Resistor in this application

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: AUTOMATIC PART No. FUSE	AUTOMATIC PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	15A. 32V.	A201	A300	311015	155020	AGC15	HDJ-B

DIAL LIGHTS

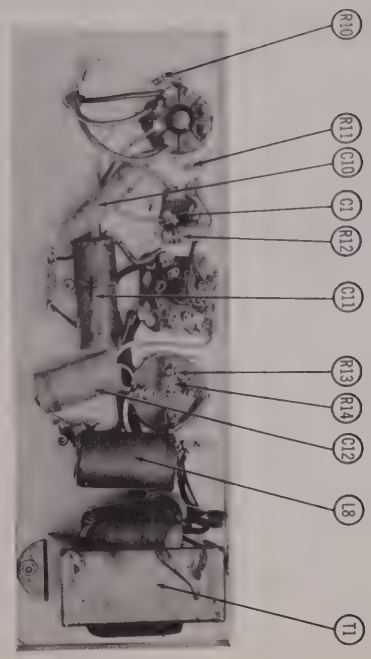
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AUTOMATIC PART No.		NOTES
M3	Bayonet	6.8	.15	Brown	T47		Type No. 47

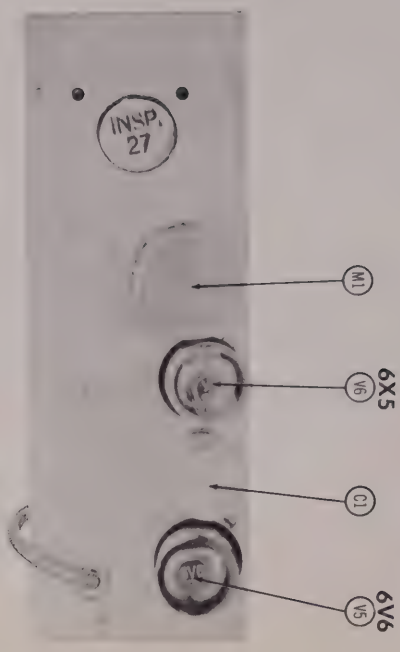
MISCELLANEOUS

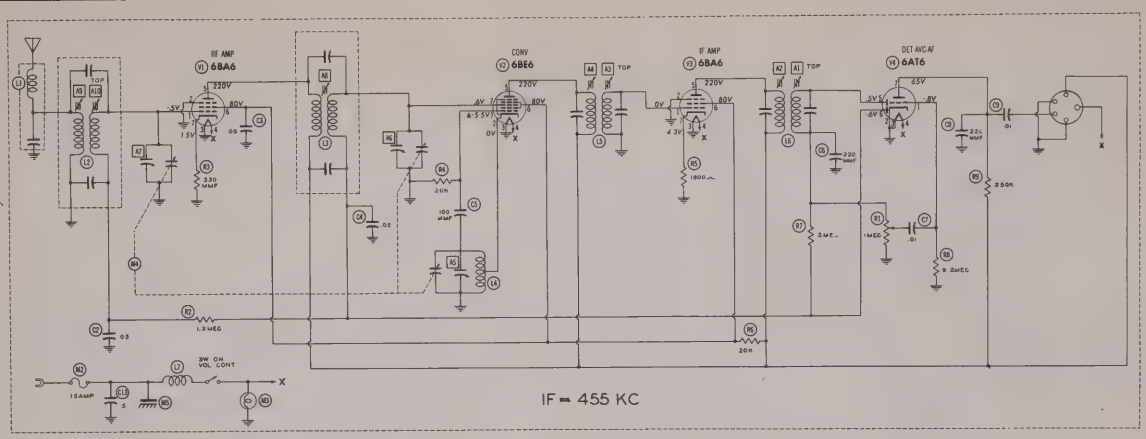
ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M4	3 Gang Var. Cap.	CV-100A	(23-391MMF, 24-387MMF, 35-198MMF)
M5	Spark Plate		
	Dial Scale	D151	
	Dial Pointer	PS151	
	Knob	157	

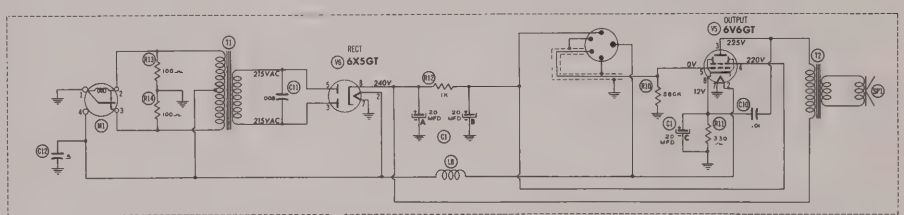
TUNING GANG FULLY OPEN

DIAL CORD DRIVE









RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	4.2Meg	0Ω	0Ω	4Ω	115Ω	125KΩ	230Ω	
V 2	6BE6	225KΩ	8Ω	0Ω	4Ω	110Ω	125KΩ	2Meg	
V 3	6BA6	230Ω	0Ω	0Ω	4Ω	115Ω	125KΩ	1.8MΩ	
V 4	6AT6	9.2Meg	0Ω	9Ω	4Ω	1Meg	2Meg	125KΩ	
V 5	6V6GT	INF	6Ω	145MΩ	115Ω	540KΩ	INF	0Ω	330Ω
V 6	6X5GT	INF	6Ω	280Ω	INF	330Ω	INF	0Ω	60KΩ

1 MEASURED FROM PDT 6 OF V6
2 TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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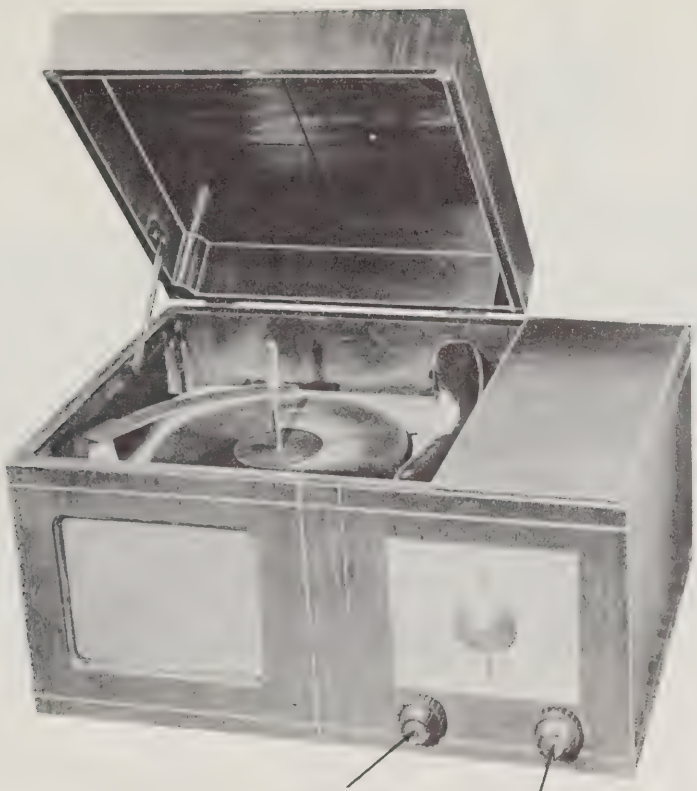
1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

CORONADO
MODEL 15RA37-43-9230A

CORONADO
MODEL 15RA37-43-9230A



CORONADO
MODEL 15RA37-43-9230A

TRADE NAME	Coronado Model 15RA37 - 43 - 9230A
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th St., Minneapolis, Minn.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver
TUBES (FIVE)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC - 60 Cycle
RATING	.220 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Step 2 should be performed with receiver chassis installed on cabinet, and with pointer properly set. To set pointer, turn tuning gang fully closed and set pointer at low frequency end, parallel to base of dial.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B - .
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to osc. trimmer lug. Low side to B - .	455KC (400~mod.)	Point of non-interference.	Across voice coil.	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1500KC	1500KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT 509742 - SEE V-M MODEL 950 PHOTOFACT SET #107 - FOLDER #13 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	150	508147	PRS150/30-20		EDL3215		TVA-2421	Filter (Red)
B	20	150							Filter (Blue)
C2	100	500	512503	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Osc. Grid Cap.
C3	.05	400	512028	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C4	100	500	512503	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Diode RF Filter
C5	.05	400	512028	P488-05	DF-503	PTE4S5		4TM-S5	Phono Isolation
C6	.05	400	512028	P488-05	DF-503	PTE4S5		4TM-S5	Phono Isolation
C7	.01	400	512010	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C8A	.005								Audio Coupling
B	250		♦ 505858		♦ PC-70				AF Amp. Plate Bypass
C									Audio Output Grid
C9	.005	600	512006	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C10	.05	600	512030	P688-05	DF-503	PTE6S5		6TM-S5	Rectifier Plate
C11	.15	400	512040	P488-15		PTE4P15		4TM-P15	Line Isolation

♦ Items C8A, C8B, C8C, R7A, R7B are combined in one unit
When replacing items separately, C8B and C8C should total 250MMF

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	1Meg	½	509436	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

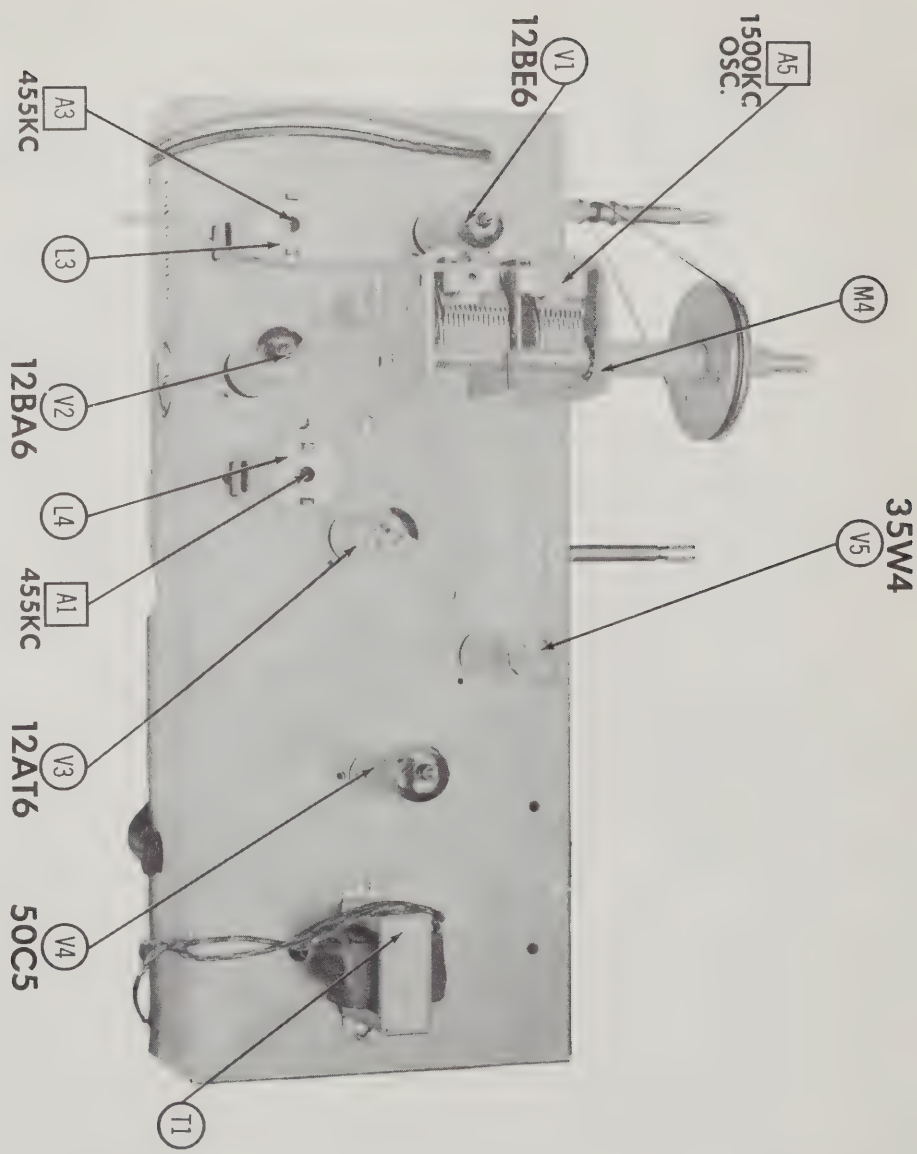
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	
R2	22KΩ	½	510161		Osc. Grid
R3	150Ω	½	510122	BTS-150	IF Amp. Cathode
R4	3.3Meg	½	510194	BTS-3.3Meg	AVC Network
R5	470KΩ	½	510185	BTS-470K	Diode Filter
R6	10Meg	½	510197	BTS-10Meg	AF Amp. Grid
R7A	500KΩ	½	♦505858		AF Amp. Plate
B	500KΩ	½			Output Grid
R8	220Ω	½	510125	BTS-220	Output Cathode
R9	2200Ω	1	510243	BTA-2200	Filter
R10	27Ω	½	510108		Rectifier Ballast

♦ Items R7A, R7B, C8A, C8B, C8C are combined in one unit

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.2K	3.1Ω	200Ω Tap ⓐ 9Ω	.6Ω	509739	A3332	A-3025	R0-2①	① Drill one new mtg. hole

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.1Ω	509741 ①	ST-105 Mod. P5-X	5A07	① Use universal mfg. bracket, with speaker Kit
	CONE DIA.	V. C. DIA.				
SP1B	5"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	CORONADO PART No.	MERIT PART No.	
L1	Loop Ant.	2.2Ω		509747		Includes Trimmer
L2	Osc. Coil	.3Ω	3.2Ω	506094		
L3	Input IF	22Ω	22Ω	505867	BC-352	
L4	Output IF	22Ω	22Ω	505867	BC-353	

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	CORONADO PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	509896	AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTIDGES LISTED, FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

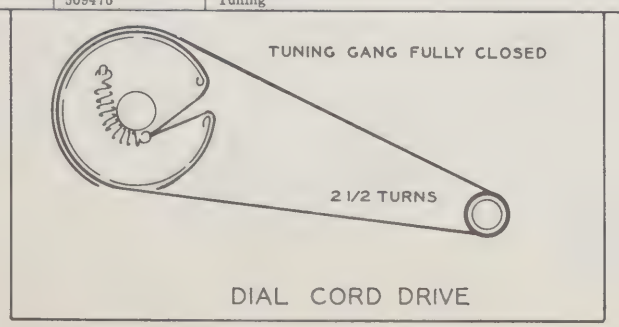
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

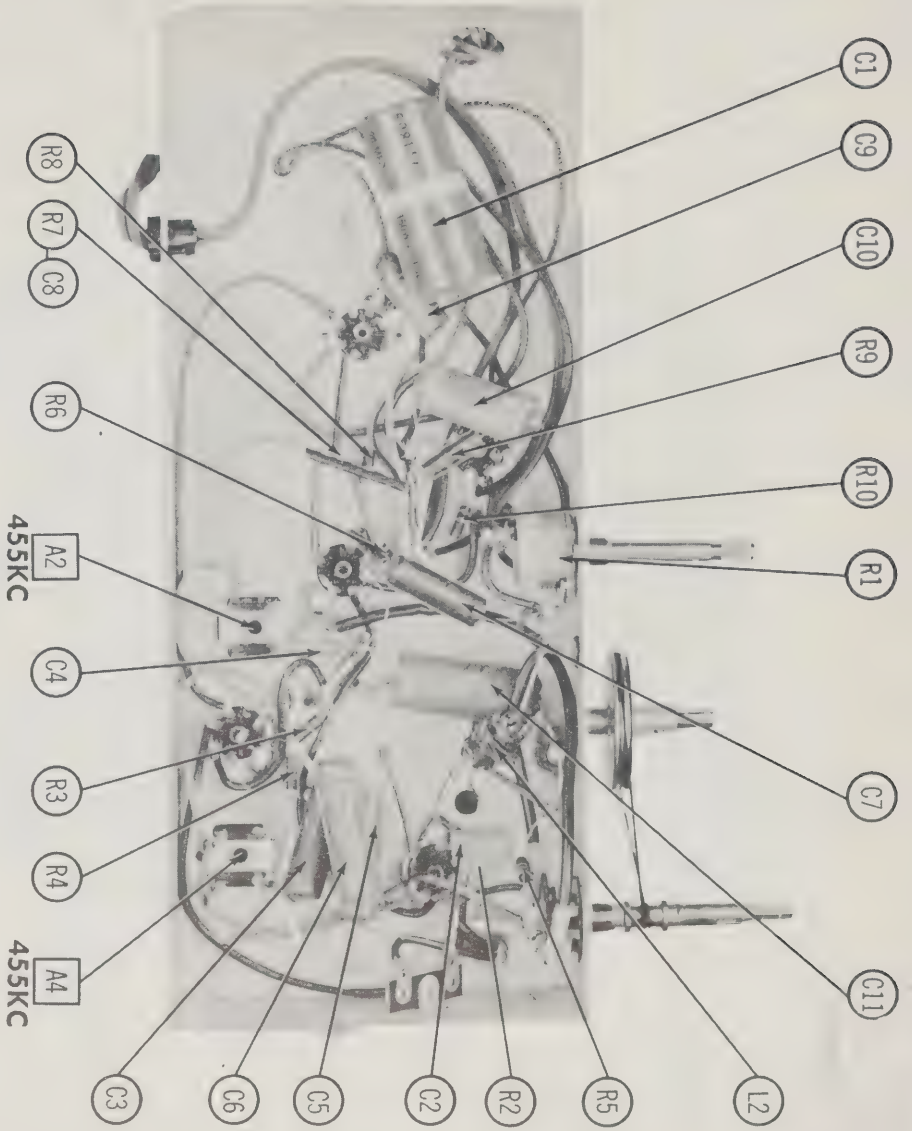
ITEM No.	REPLACEMENT DATA			REMARKS
	CORONADO PART No.	WALCO PART No.	JENSEN PART No.	
M2	509897	W-30AGA or W-30AGS	JP-312	

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M3	Switch	509726	Phono - Radio
M4	2 gang var. cap.	509727	(13-457MMF, 31-202MMF)
A6	Trimmer	509899	Ant. Adj. (3-35MMF)
	Cabinet	509730	
	Dial Scale	509744	
	Pointer	509743	
	Knob	509745	Vol.-On/Off
	Knob	509746	Phono - Radio
	Knob	509476	Tuning



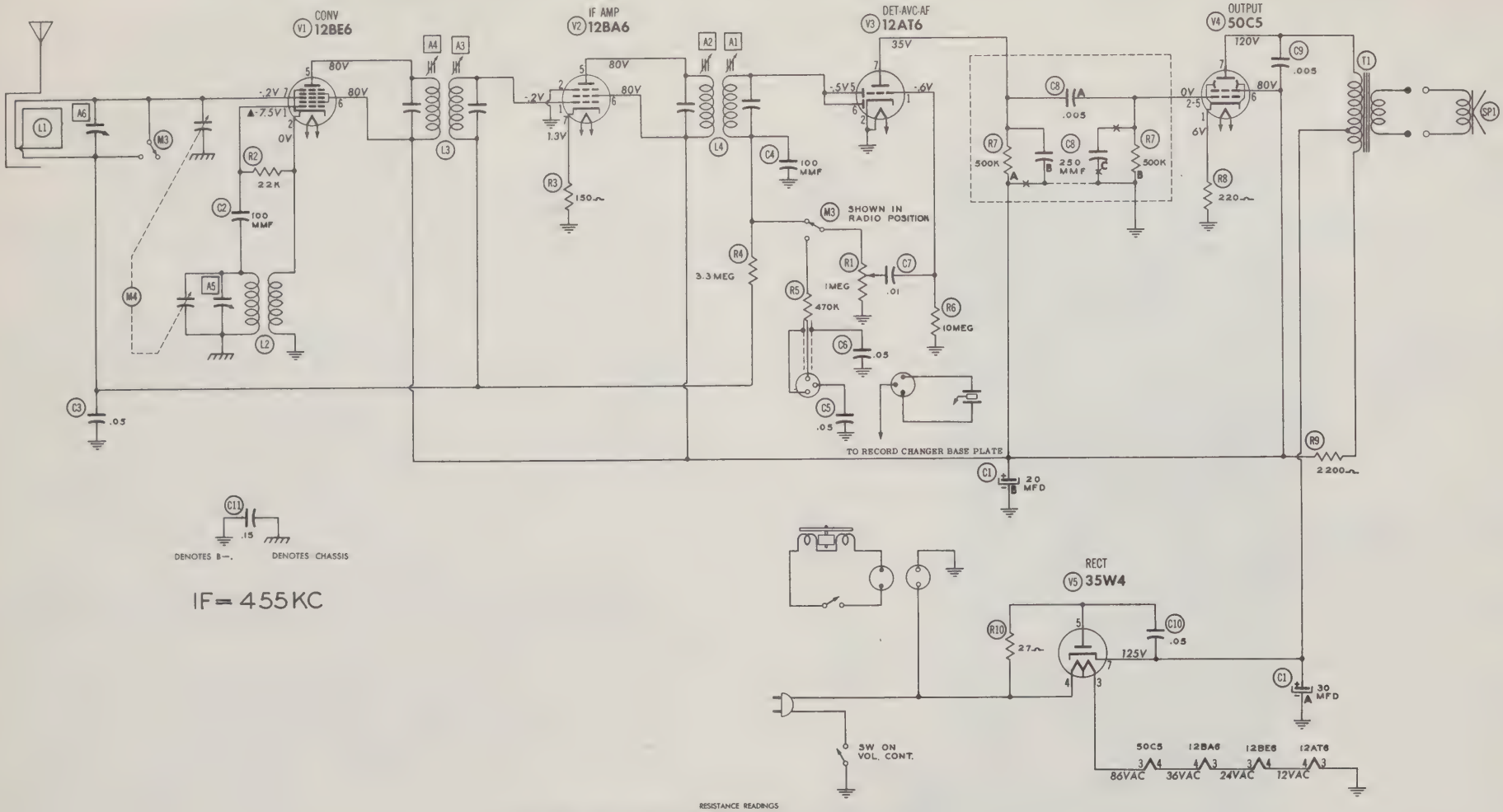
CHASSIS—BOTTOM VIEW



SET 173 FOLDER 5

CORONADO MODEL 15RA37-43-9230A

CORONADO MODEL 15RA37-43-9230A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.3Ω	24Ω	12Ω	†2.2KΩ	†2.2KΩ	4.3Meg
V 2	12BA6	4.3Meg	0Ω	24Ω	36Ω	†2.2KΩ	†2.2KΩ	150Ω
V 3	12AT6	10Meg	0Ω	0Ω	12Ω	1Meg	1Meg	†500KΩ
V 4	50C5	220Ω	500KΩ	86Ω	36Ω	500KΩ	†2.2KΩ	†200Ω
V 5	35W4	†10Ω	INF	85Ω	121Ω	148Ω	103Ω	90KΩ

ALL MEASUREMENTS TAKEN IN "RADIO" POSITION
† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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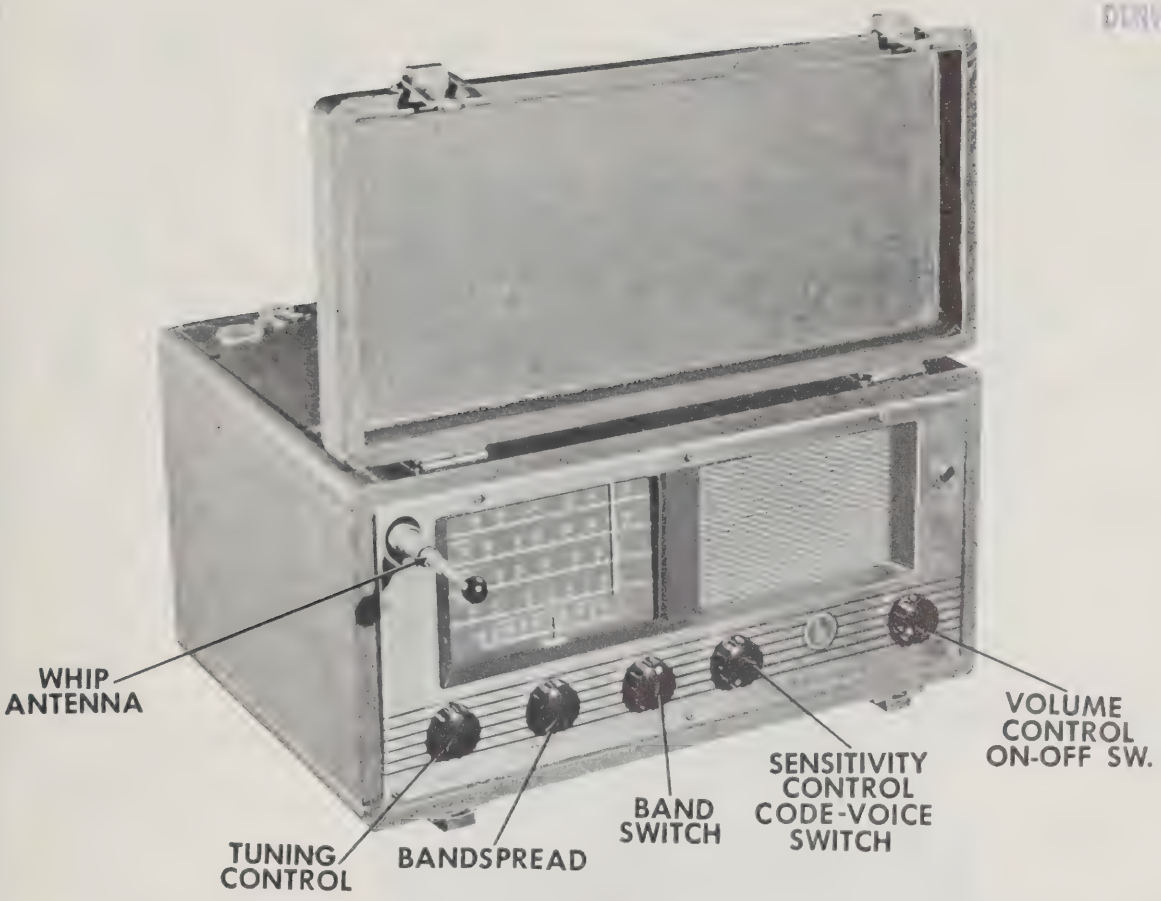
[illegible] TECHNICIAN
[illegible] MAIN ST.
DENVER, COLORADO



HALLICRAFTERS
MODEL S-72L

TRADE NAME	Hallicrafters Model S-72L
MANUFACTURER	Hallicrafters Co., Inc., 4401 W. 5th. Ave., Chicago 24, Ill.
TYPE SET	Three Power Portable Communication Superheterodyne Receiver
TUBES (Eight)	Types 1T4 RF Amp., 1R5 Osc., 1U4 Mixer, 1U4 1st. IF Amp., 1U4 2nd. IF Amp., 1U5 Det. -AVC-AF Amp., 3V5 Audio Output, 1U5 BFO
POWER SUPPLY	105-125 Volts AC-DC or 7.5 Volts "A" Supply & 90 Volts "B" Supply In Pack Form
RATINGS	.320 Amp. @ 117 volts AC or 100 MA @ 7.5 Volts DC & 25MA @ 90 Volts DC
TUNING RANGE	BAND #1 175KC-420 KC BAND #2 540KC-1600 KC BAND #3 1.6MC-4.4MC BAND #4 4.3 MC -11.5MC

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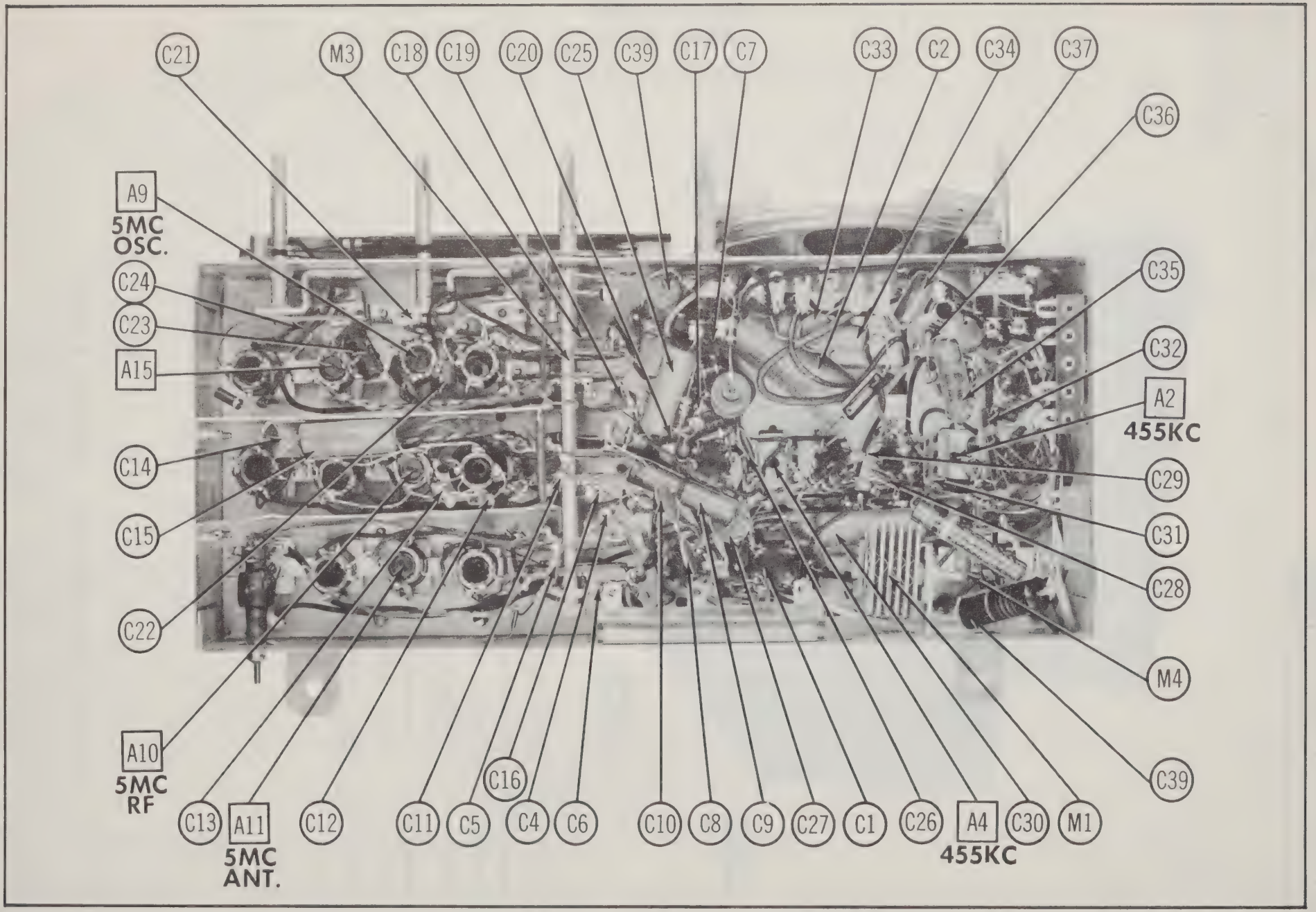
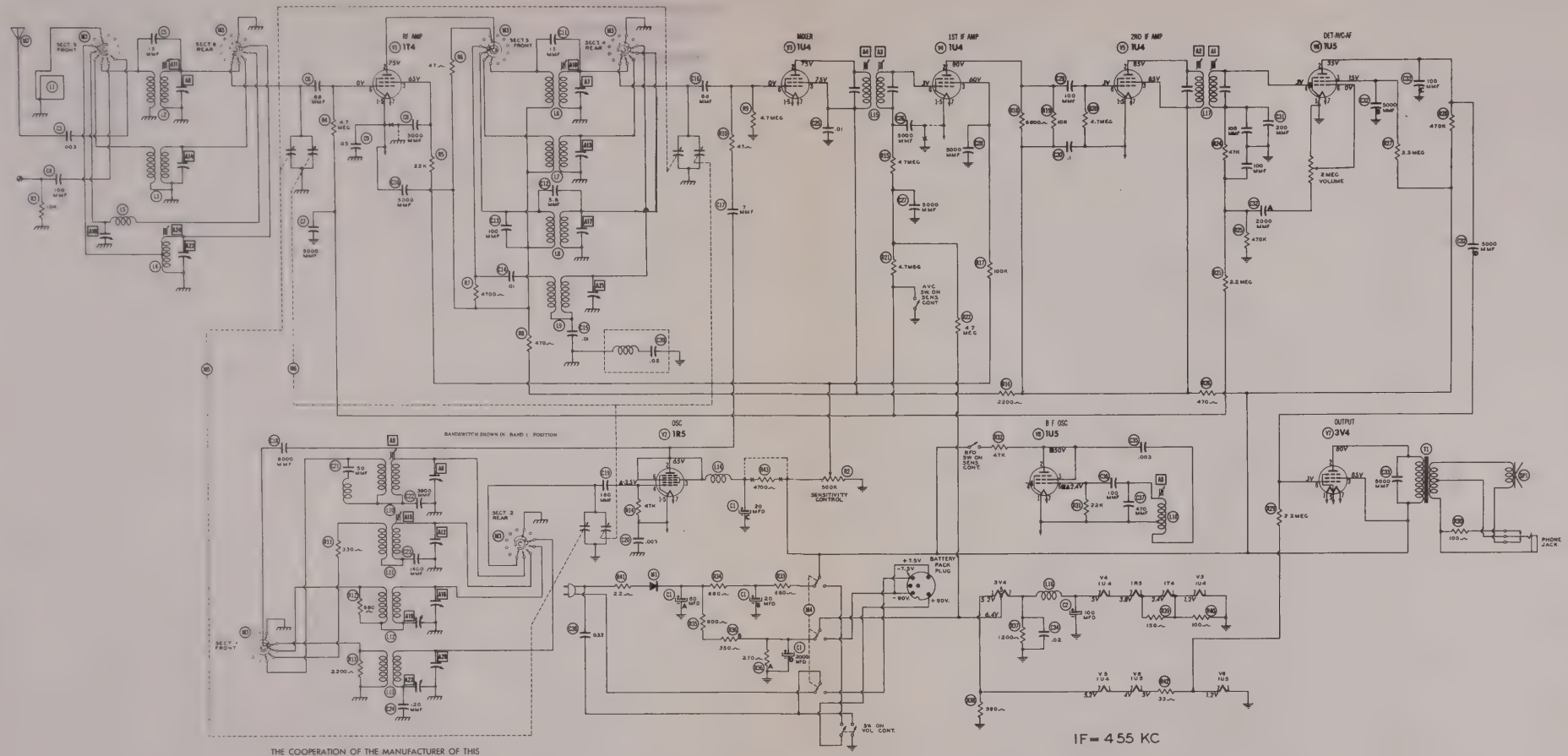

C21
M3
C18
C19
C20
C25
C39
C17
C7
C33
C2
C34
C37
C36
A9
5MC
OSC.
C24
C23
A15
C35
C32
A2
455KC
C14
C29
C15
C31
C28
C22
M4
A10
5MC
RF
C16
C39
C13
A11
5MC
ANT.
C12
C11
C5
C4
C6
C10
C8
C9
C27
C1
C26
A4
455KC
C30
M1



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	*	†4.5KΩ	†23KΩ	INF	*	5.6Meg	*
V 2	1R5	*	†6.1KΩ	†6.1KΩ	47KΩ	*	†6.1KΩ	*
V 3	1U4	*	†4.1KΩ	†4.1KΩ	INF	*	4.7Meg	*
V 4	1U4	*	†6KΩ	†100KΩ	INF	*	6Meg	*
V 5	1U4	*	†1.9KΩ	†1.9KΩ	INF	*	4.7Meg	*
V 6	1U5	*	†470KΩ	†3.3Meg	500KΩ	INF	50KΩ	*
V 7	3V4	*	†1.7KΩ	†1.4KΩ	INF	*	2.2Meg	*
V 8	1U5	*	■†47KΩ	■†47KΩ	INF	INF	22KΩ	*

ALL MEASUREMENT TAKEN IN BAND 2 POSITION
† MEASURED FROM OUTPUT OF M1
VOICE-CODE SWITCH IN "VOICE" POSITION
■ MEASURE IN "CODE" POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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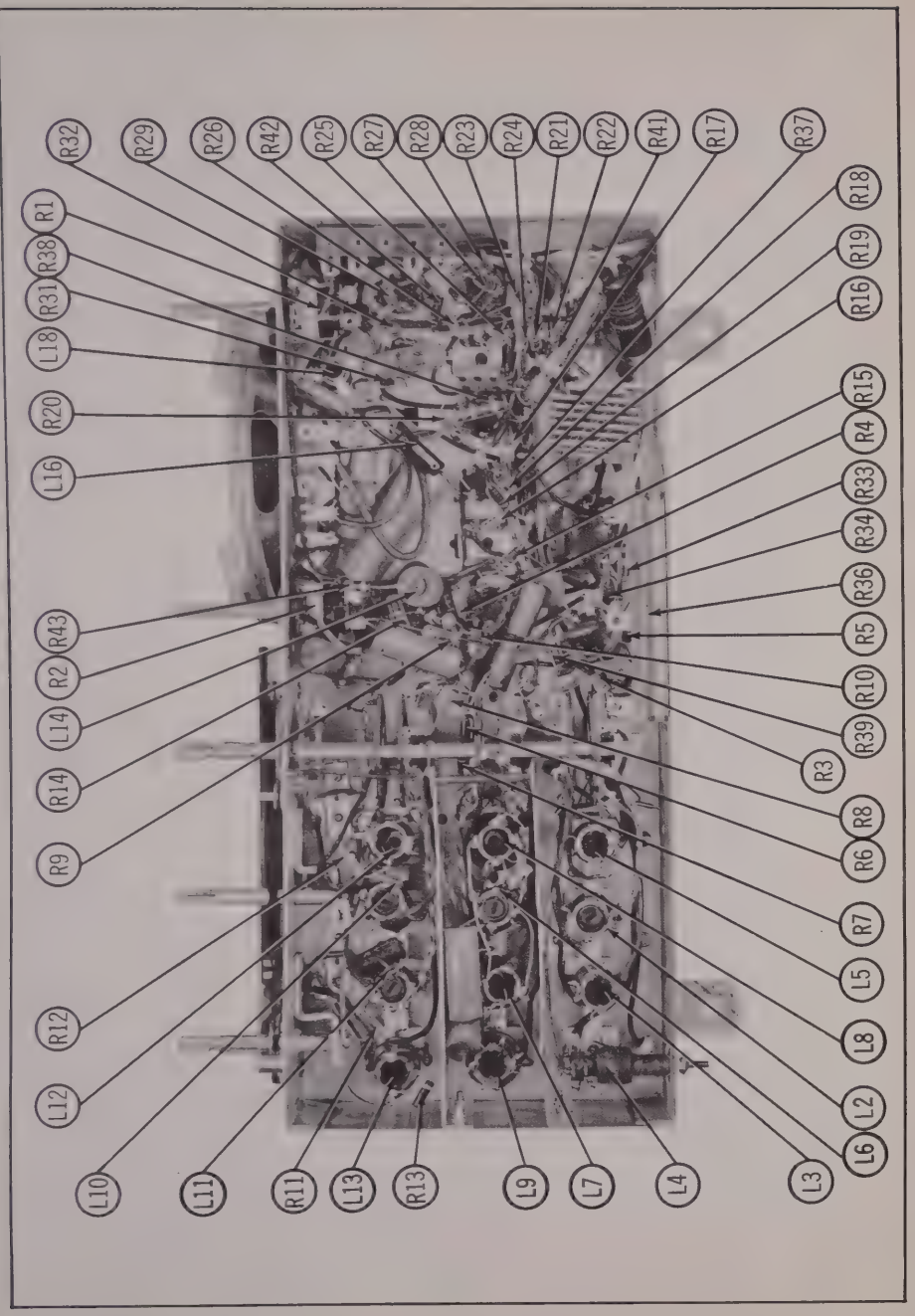
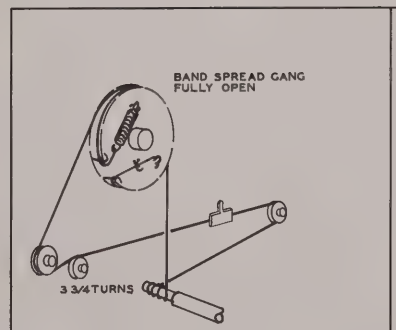


HALLICRAFTERS
MODEL S-72L

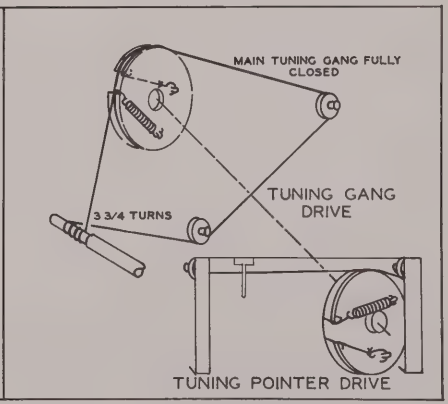
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set main tuning pointer turn main tuning gang fully closed and align pointer with left hand index marks on dial.
To set band spread pointer turn band spread gang fully open and align pointer with "0" on band spread scale.
Alignment should be made with VOICE/CODE control at "Voice" and band spread dial pointer at "0"
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
During steps 7, 8, 9 and 10 make certain that receiver loop is connected.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Direct	High side to stator of center section of tuning gang.	455KC (400%Mod.)	1	1.00MC	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	"	"	455KC (unmod.)	"	"	"	A5	Set the Voice-Code Control at "Code". Adjust A5 for a 1000 cycle beat note. Reset control to "VOICE".
3.	10MMF and 15MMF	High side thru 15MMF to external antenna lead. Low side to chassis. Connect 10MMF from ext. ant. lead to chassis.	11.5MC (400%Mod.)	4	11.5MC	"	A6, A7 A8	Adjust for maximum output.
4.	"	"	5MC	"	5MC	"	A9, A10, A11	"
5.	"	"	4.4MC	3	4.4MC	"	A12, A13 A14	"
6.	"	"	1800KC	"	1.8MC	"	A15	"
7.	"	"	1500KC	2	1.5MC	"	A16, A17 A18	"
8.	"	"	600KC	"	.60MC	"	A19	"
9.	"	"	400KC	1	.40MC	"	A20, A21 A22,	"
10.	"	"	180KC	"	.18MC	"	A23, A24	"



BAND SPREAD GANG FULLY OPEN



TUNING POINTER DRIVE

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		Hallicrafters PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	90X1T4	1T4	6AR	
V2	Oscillator	90X1R5	1R5	7AT	
V3	Mixer	90X1U4	1U4	6AR	
C4	1st. IF Amplifier	90X1U4	1U4	6AR	
V5	2nd. IF Amplifier	90X1U4	1U4	6AR	
V6	Det.-AVC-AF Amp	90X1U5	1U5	6BW	
V7	Audio Output	90X3V5	3V5	6BX	
V8	BFO	90X1U5	1U5	6BW	

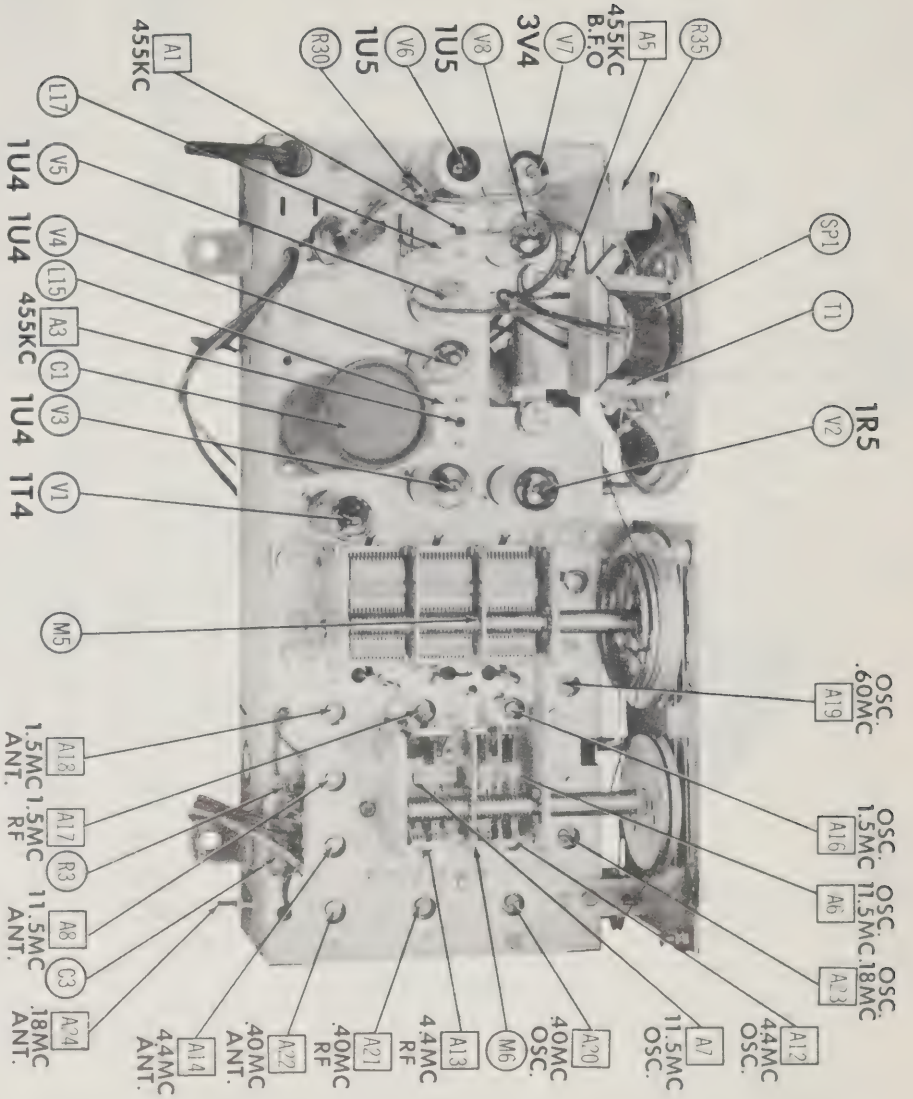
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	60	150	45B162						▪ Filter
B	20	150							■ Filter
C	20	150							▲ D_e coupling
D	2000	15							Fil. Filter
C2	100	50	45A116	PRS50/100		BRH501		TVA-1310	Fil. Filter
C3	.003	600	46AZ302J	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	RF Coupling
C4	100		47B20101K5	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C5	15		47B20150K5	SI15	D6-150		GP1K-150	5GA-Q15	RF Coupling
C6	68		47B20680K5	SI68	D6-680		GP1K-680	5GA-Q68	RF Coupling
C7	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AVC Filter
C8	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Amp. Screen Bypass
C9	.05	200	46AU503J	P288-05	DF-503	PJ2S5		2TM-S5	RF Amp. Fil. Bypass
C10	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C11	15		47B20150K5	SI15	D6-150		GP1K-150	5GA-Q15	Fixed Trimmer
C12	5.6		47A160-7						Fixed Trimmer
C13	100		47B20101K5	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Fixed Trimmer
C14	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	RF Coupling
C15	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	RF Coupling
C16	68		47B20680K5	SI68	D6-680	5R5Q7	GP1K-680	5GA-Q68	RF Coupling
C17	7		47X20UK070K				N750K-070		Osc. Coupling
C18	8000							MS-28	Osc. Feedback †
C19	180	500		1469-0002	D6-181	5R5T2	GP2K-181	MS-32	Osc. Grid Cap •
C20	.003	600	46AZ302J	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Osc. Fil. Bypass
C21	50		47B20500K5	SI50	D6-500	TM5Q5	GP1K-500	5GA-Q5	Fixed Padder
C22	3900	500	47X35A392J	1464-004		1DR5D4			Fixed Padder
C23	1400	500	47X30A142J	1464-0015		1R5D15			Fixed Padder
C24	120	500	47X20B121K						Fixed Padder
C25	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Mixer Dec.
C26	5000		47A168	BPD-005	DD-502	TM5D2	811-005	5HK-D5	AVC Filter
C27	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AVC Filter
C28	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. IF Amp. Screen
C29	100		47B20101K5	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C30	.1	400	46AU104J	P488-1	DF-104	PTE4P1		4TM-P1	2nd. IF Amp. Fil.
C31	200	500	47B20221K5	1468-0002	D6-201	5W5T2	GP2K-201	IFM-32	Diode RF Filter
C32A	2000			SI2000	D6-202	TM5D2	GP2-333-202		Audio Coupling
B	5000		47A203	SI5000	D6-502	TM5D5	GP2-333-502	34C5	AF Amp. Screen Bypass
C	100			SI100	D6-101	TM5T1	GP1K-101		AF Amp. Plate Bypass
D	5000			SI5000	D6-502	TM5D5	GP2-333-502		Audio Coupling
C33	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Output Plate
C34	.02	200	46AU203J	P288-02	DF-203	PJ2S2		2TM-S2	Audio Output Fil.
C35	.003	600	46AZ302J	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	BFO Feedback
C36	100		47X20A101M	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	BFO Grid Cap.
C37	470	500	47X20A471K	1469-0005		5R5T5		MS-35	Fixed Trimmer
C38	.033	600	689ZGXY-03			PJ6S3		6TM-D3	Line Filter ¶
C39	.05	400	46A174	P488-05 ‡		NF10170		72P51	Line Isolation

† Some models use 5000MMF in this application (Part #47A168)
¶ Some models use.02MFD in this application (Part #46BR203L6)
‡ Rewind coil on replacement unit exactly as original
• Some models use 100MMF in this application (Part #47B20101K5)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	Hallicrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	2Meg	½	25B839	Q13-139	AG-66-Z	AB-76	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	KB-3	Attach to R1A per instructions
R2	500KΩ	½	25B847 *			SB-230-S	Sensitivity & SW Control

* The Voice/Code Switch on this Control operates at the extreme clockwise position

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	Hallicrafters PART No.	IRC PART No.	
R3	10KΩ	½	23X20X103K		Antenna Isolation
R4	4.7Meg	½	23X20X475M		RF Amp. Grid
R5	22KΩ	½	23X20X223K		RF Amp. Screen
R6	47Ω	½	23X20X470K		RF Coil Shunt
R7	4700Ω	½	23X20X472K	BTS-4700	RF Amp. Plate
R8	470Ω	½	23X20X471K	BTS-470	Decoupling
R9	4.7Meg	½	23X20X475M		Mixer Grid
R10	47Ω	½	23X20X470K		Parasitic Suppressor
R11	330Ω	½	23X20X331K		Parasitic Suppressor
R12	680Ω	½	23X20X681K	BTS-680	Osc. Coil Shunt
R13	2200Ω	½	23X20X222K	BTS-2200	Osc. Coil Shunt
R14	47KΩ	½	23X20X473K		Osc. Grid
R15	4.7Meg	½	23X20X475M	BTS-4.7Meg	AVC Network
R16	2200Ω	½	23X20X222K	BTS-2200	Decoupling
R17	100KΩ	½	23X20X104K	BTS-100K	1st.IF Amp. Screen
R18	6800Ω	½	23X20X682K		1st.IF Amp. Plate
R19	10KΩ	½	23X20X103K		1st.IF Amp. Plate
R20	4.7Meg	½	23X20X475M		2nd.IF Amp. Grid
R21	4.7Meg	½	23X20X475M	BTS-4.7Meg	AVC Network
R22	4.7Meg	½	23X20X475M	BTS-4.7Meg	AVC Network
R23	2.2Meg	½	23X20X225M	BTS-2.2Meg	AVC Network
R24	47KΩ	½	23X20X473K	BTS-47K	Diode Filter
R25	470KΩ	½	23X20X474K	BTS-470K	Diode Load
R26	470Ω	½	23X20X471K	BTS-470	Decoupling
R27	3.3Meg	½	23X20X335M	BTS-3.3Meg	AF Amp. Screen
R28	470KΩ	½	23X20X474K	BTS-470K	AF Amp. Plate
R29	2.2Meg	½	23X20X225M	BTS-2.2Meg	Output Grid
R30	100Ω	½	23X20X101K	BTS-100	Headphone Shunt
R31	22KΩ	½	23X20X223K	BTS-22K	BFO Grid
R32	47KΩ	½	23X20X473K	BTS-47K	BFO Plate
R33	680Ω	1	23X30X681K	BTA-680	Filter - See Note 1
R34	680Ω	1	23X30X681K	BTA-680	Filter
R35	600Ω	9.3	24A913	1 3/4A-600	Series Filament - Wire Wound
R36A	270Ω	2.3	24A912		Filament Shunt - Wire Wound
B	350Ω	5.5			Series Filament - Wire Wound
R37	1200Ω	½	23X20X122K	BTS-1200	Filament String
R38	560Ω	1	23X30X561K	BTA-560	Filament String
R39	150Ω	½	23X20X151K	BTS-150	Filament String
R40	100Ω	½	23X20X101K	BTS-100	Filament String
R41	22Ω	2	24BV220E		Surge Limiter - Wire Wound
R42	33Ω	½	23X20X330K		Series Filament
R43	4700Ω	½			Osc. Decoupling - See Note 2

Note 1. Some Models use a 560Ω Resistor in this application
Note 2. Not used in all Models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	8KΩ	102Ω tap @ 3.5Ω	335Ω	30Ω tap @ 3Ω	Part of 85C093				

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Hallicrafters PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.3Ω	85C093	ST-105 Mod. P5-X ①	5A07	① Fabricate new mtg. bracket.
	CONE DIA.	V. C. DIA.				
SP1B	5"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Hallicrafters PART No.	MERIT PART No.	
L1	Loop Ant.	.8Ω		57C125		
L2	Ant. Coil	6.8Ω	.1Ω	51B1250		Band 4
L3	Ant. Coil	1Ω	1.6Ω	51B1137		Band 3
L4	Ant. Coil	22.5		51B1191		Band 1 Tap @ 3.4Ω
L5	Ant. Loading	3.4Ω		51B1136		Band 2
L6	RF Coil	7.3Ω	.1Ω	51B1253		Band 4
L7	RF Coil	7.2Ω	3.6Ω	51B1248		Band 3
L8	RF Coil	7Ω	8.5Ω	51B1247		Band 2
L9	RF Coil	2.8Ω	27Ω	51B1192		Band 1
L10	Osc. Coil	4.3Ω	.1Ω	51B1254		Band 4
L11	Osc. Coil	.6Ω	1.5Ω	51B1255		Band 3
L12	Osc. Coil	1.1Ω	3.5Ω	51B1144		Band 2
L13	Osc. Coil	5.5Ω	11.5Ω	51B1193		Band 1
L14	Osc. Plate Choke	51Ω		53A008		
L15	1st. IF Trans.	24Ω	24Ω	50C233	BC-352	
L16	Fil. Choke	2Ω		53A121		
L17	2nd. IF Trans.	25Ω	24Ω	50C234		
L18	BFO Osc.	8.5Ω		50B402		Tap @ 2.2Ω

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT	Hallicrafters PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	
M1	.145A.	72A151	ND-5	5P1	1005A	

BATTERIES

ITEM No.	VOLTAGE	Hallicrafters PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	A-7.5V B-90V				753 or 754			G6M60 or F6A60	

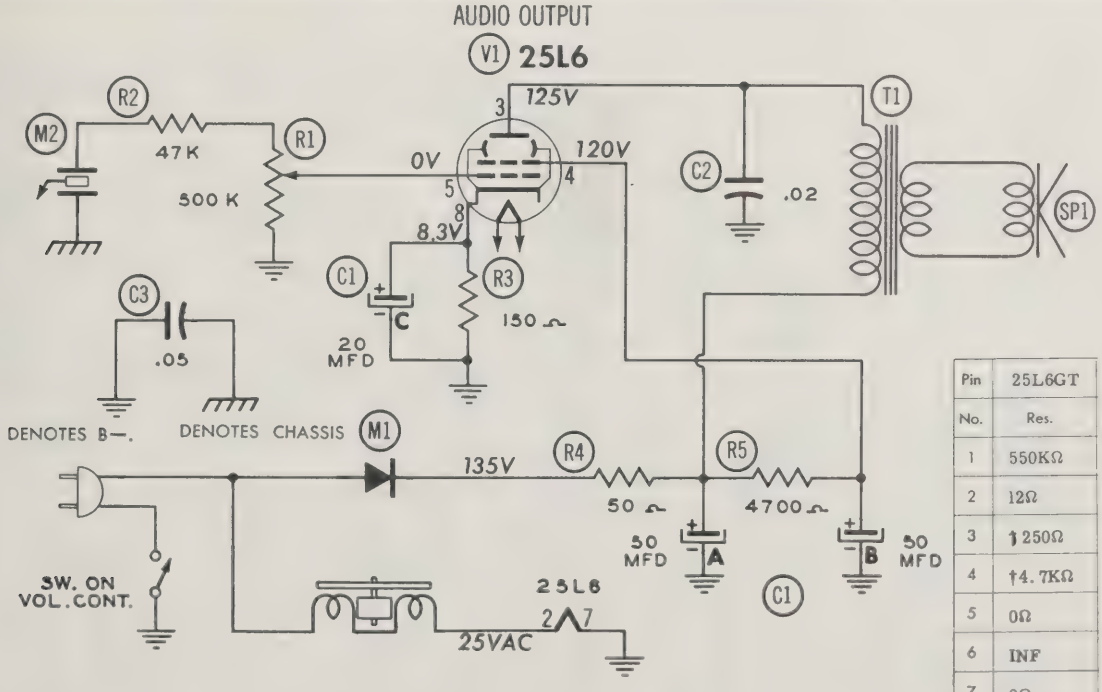
MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M3	Switch	60C362	Band Selector
M4	Switch	60A363	Power Change -Over
M5	Tuning Cap	48C221	Main (12-452MMF - Each Section)
M6	Tuning Cap	48C227	Bandspread
M7	Antenna	57B142	Whip
	Trimmer Strip	44B385	Ant. Adj. (4 Sections)
	Trimmer Strip	44B386	RF Adj. (4 Sections)
	Trimmer Strip	44B387	Osc. Adj. (4 Sections)
A19	Trimmer	44A376	Osc. Padder (Band #2)
A23	Trimmer	44A384	Osc. Padder (Band #1)
	Cabinet	78F491	
	Dial Scale	83C359	
	Pointer	82A161	Main Tuning
	Pointer	82A161-1	Bandspread
	Dial Window	22B250	
	Knob	15B172	Tuning & Bandspread
	Knob	15B177	Band Selector, Voice/Code & Volume

JACKSON
MODEL JP-20

JACKSON
MODEL JP-20

TRADE NAME	Jackson Model JP-20
MANUFACTURER	Jackson Ind., Inc., 500 E.40th. St., Chicago, Ill.
TYPE SET	AC Operated Phono Audio Amplifier With Manual Record Player
TUBES (One)	Type 25L6GT AF Amp.
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .150 Amp. @ 117Volts AC



Pin No.	25L6GT Res.
1	550KΩ
2	12Ω
3	†250Ω
4	†4.7KΩ
5	0Ω
6	INF
7	0Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: JACKSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Audio Output	25L6GT	25L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: JACKSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	▲50	150		AFH3-79		UP5515C		TVL-3430	Filter
B	■50	150							Filter
C	20	25							Filter
C2	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Output Plate
C3	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JACKSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	34-011-543	Q13-133	AG-60-Z	BSK-60-S	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JACKSON PART No.	IRC PART No.	IDENTIFICATION CODES
R2	47KΩ	½		BTS-47K	Tone Compensation
R3	150Ω	1½		BTS-150	Output Cathode
R4	50Ω	1½			Surge Limiter
R5	4700Ω	½		BTS-4700	Filter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: JACKSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2.3KΩ	3.1Ω	200Ω	.6Ω	Part of 42QK61	A-3876 ①	A-2928 ①	RO-2 ①	① Bend mtg. tabs down, file out slots and mount on orig. bracket.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: JACKSON PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	P. M.	3.1Ω	42QK61	ST-113 Mod. P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP1B	4"	9/16"				

SELENIUM RECTIFIER

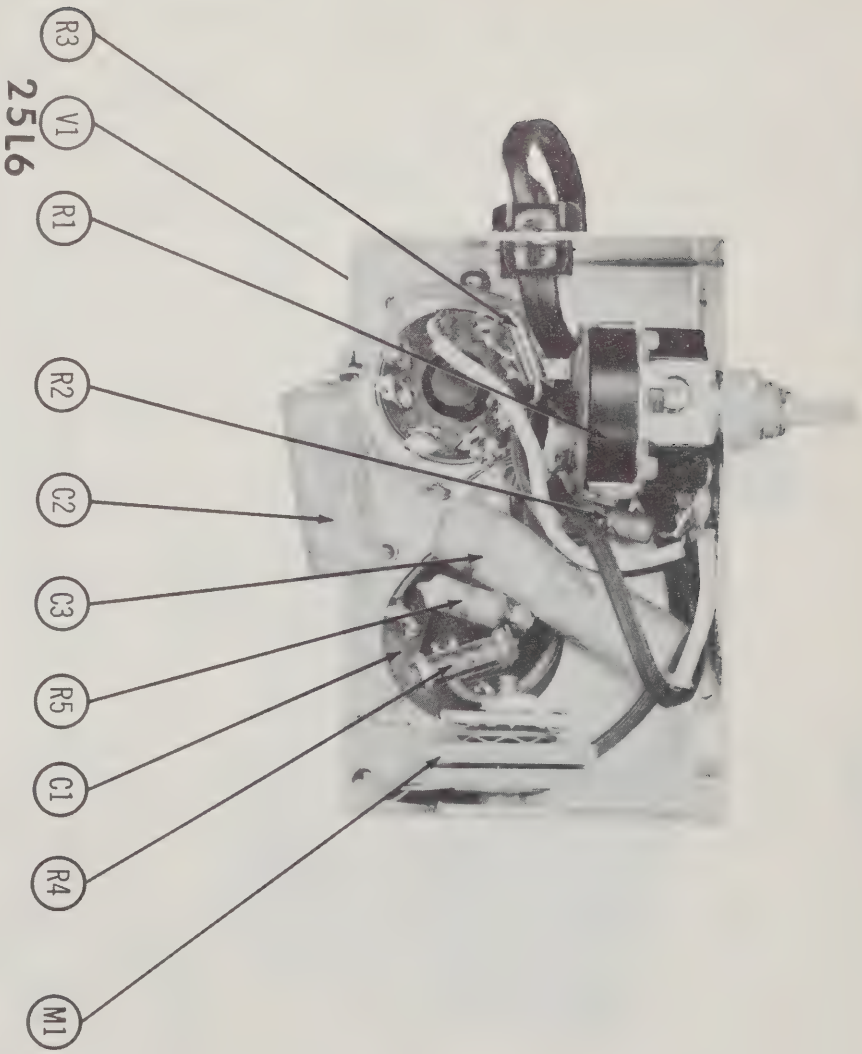
ITEM No.	RATING: CURRENT	REPLACEMENT DATA: JACKSON PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	NOTES
M1	.015		NB-5	8J1	1002A	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: JACKSON PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M2		L-12		W42H *92H		H-60 *2400		* Tone Arm

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

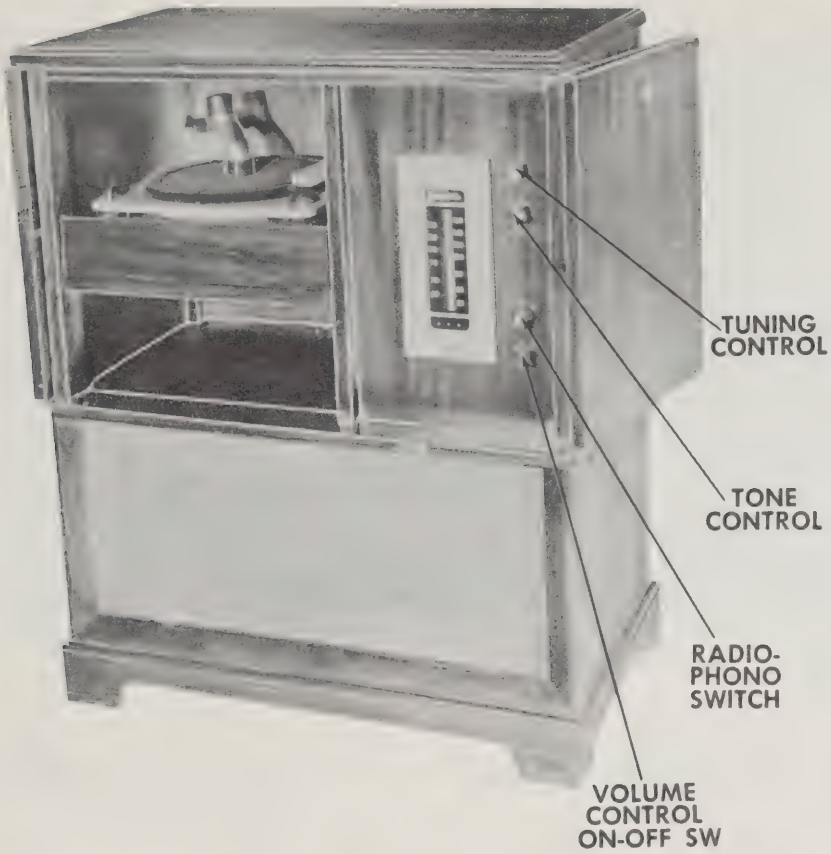
CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: JACKSON PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M3		WS-400	NY-153	



JACKSON
MODEL 254

JACKSON
MODEL 254

TRADE NAME	Jackson Model 254
MANUFACTURER	Jackson Ind., Inc., 500 E. 40th St., Chicago, Ill.
TYPE SET	AC Operated Radio - Phono Combination Superheterodyne Receiver
TUBES (SEVEN)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 12AT6 Phase Inv., (2) 50C5 Audio Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .360 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tuning gang fully open and set pointer 3 inches from right hand end of dial back plate. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B -. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7, (grid) of 12BE6 (V1). Low side to B -.	455KC (400~ Mod.)	Point of non-interference.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC	"	A6	Adjust for maximum output.
4.		"	600KC	Tune to 600KC signal	"		Check tracking at 600KC. If necessary bend outer plates of RF section of gang for maximum output at 600KC.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE SIMILAR MILWAUKEE MODEL 11600 - PHOTOFACT SET #73 FOLDER #7 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

JACKSON MODEL 254

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: JACKSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Phase Inverter	12AT6	12AT6	7BT	
V5	Audio Output	50C5	50C5	7CV	
V6	Audio Output	50C5	50C5	7CV	
V7	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: JACKSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150		PRS150/40-40		EDL4415SS		TVA-2445	Filter
B	40	150							Filter
C2	5								R F Coupling
C3	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	AVC Filter
C4	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C5	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.-See Note 1
C6	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C7A	.01								Audio Coupling
B	250		♦		PC-80			102C1	AF Amp. Plate
C									Output Grid
C8A	.01								Audio Coupling
B	250		†		PC-80			102C1	Phase Inv. Plate
C									Output Grid
C9	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Line Filter-See Note 2
C10	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Phono Isolation- Note 3
C11	.05	400				NF10170		72P51	Line Isolation
C12	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Tone Comp.-Note 3

Note 1. Some models use .002MFD in this application.
Note 2. Some models use .1MFD in this application.
Note 3. Not used in all models.
♦ Items C7A, C7B, C7C, R8A, R8B are combined in one unit.
When replacing items separately C7B and C7C should total 250MMF
† Items C8A, C8B, C8C, R10A, R10B are combined in one unit.
When replacing items separately C8B and C8C should total 250MMF

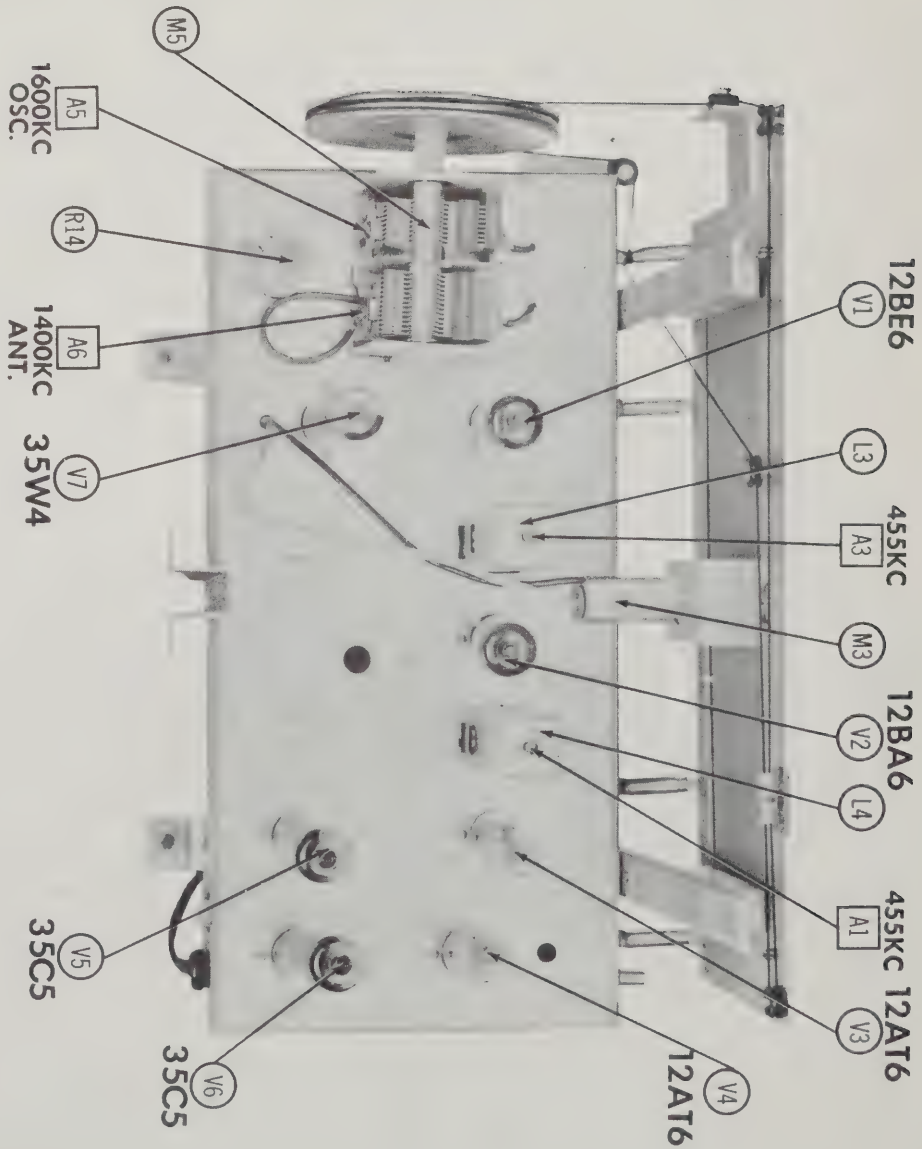
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JACKSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	10A408	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	10B409	Q13-133	AG-60-Z	BSK-60	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JACKSON PART No.	IRC PART No.	IDENTIFICATION CODES
R3	22KΩ	½			Osc. Grid
R4	510KΩ	½			IF Amp. Grid - See Note 1
R5	1Meg	½		BTS-1Meg	AVC Network
R6	47KΩ	½		BTS-47K	Diode Filter
R7	4.7Meg	½		BTS-4.7Meg	AF Amp. Grid - See Note 2
R8A	500KΩ	½	♦		AF Amp. Plate
B	500KΩ	½			Output Grid
R9	4.7Meg	½		BTS-4.7Meg	Phase Inv. Grid - See Note 2
R10A	500KΩ	½	†		Phase Inv. Plate
B	500KΩ	½			Output Grid
R11	220KΩ	½		BTS-220K	Output Grid
R12	100Ω	1		BTA-100	Output Cathode - See Note 4
R13	2200Ω	1		BTA-2200	Filter
R14	400Ω	10		1 3/4A-400	Filament Dropping - Wire Wound
R15	220Ω	½			Rectifier Ballast - See Note 3
R16	220KΩ	½		BTS-220K	Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

Note 1. Not used in all models.
Note 2. Some models use a 6.8Meg resistor in this application.
Note 3. Some models use la 15Ω resistor in this application.
Note 4. Some models use a 150Ω resistor in this application.
♦ Items R8A, R8B, C7A, C7B, C7C are combined in one unit.
† Items R10A, R10B, C8A, C8B, C8C are combined in one unit

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		JACKSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	4KΩCT	3.4Ω	230Ω CT	.5Ω	12B401	A-3856	A-2900	R0-302	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	JACKSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.4Ω	B-4601-15			
	CONE DIA.	V. C. DIA.				
SP1B	10"	1"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	JACKSON PART No.	MERIT PART No.	
L1	Loop Ant.	1.4Ω				
L2	Osc. Coil	5.2Ω				Tap at .6Ω
L3	Input IF	13Ω	14Ω		BC-352	
L4	Output IF	11Ω	13Ω			

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA								REMARKS
	JACKSON PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No. ♦		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		ACD-2J	A1 A3	W22AB-T	A62A A65MG	96-T	0-1 or S-1 and 0-3 or S-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	JACKSON PART No.	WALCO PART No.	JENSEN PART No.	
M2			W-16 and W-17	

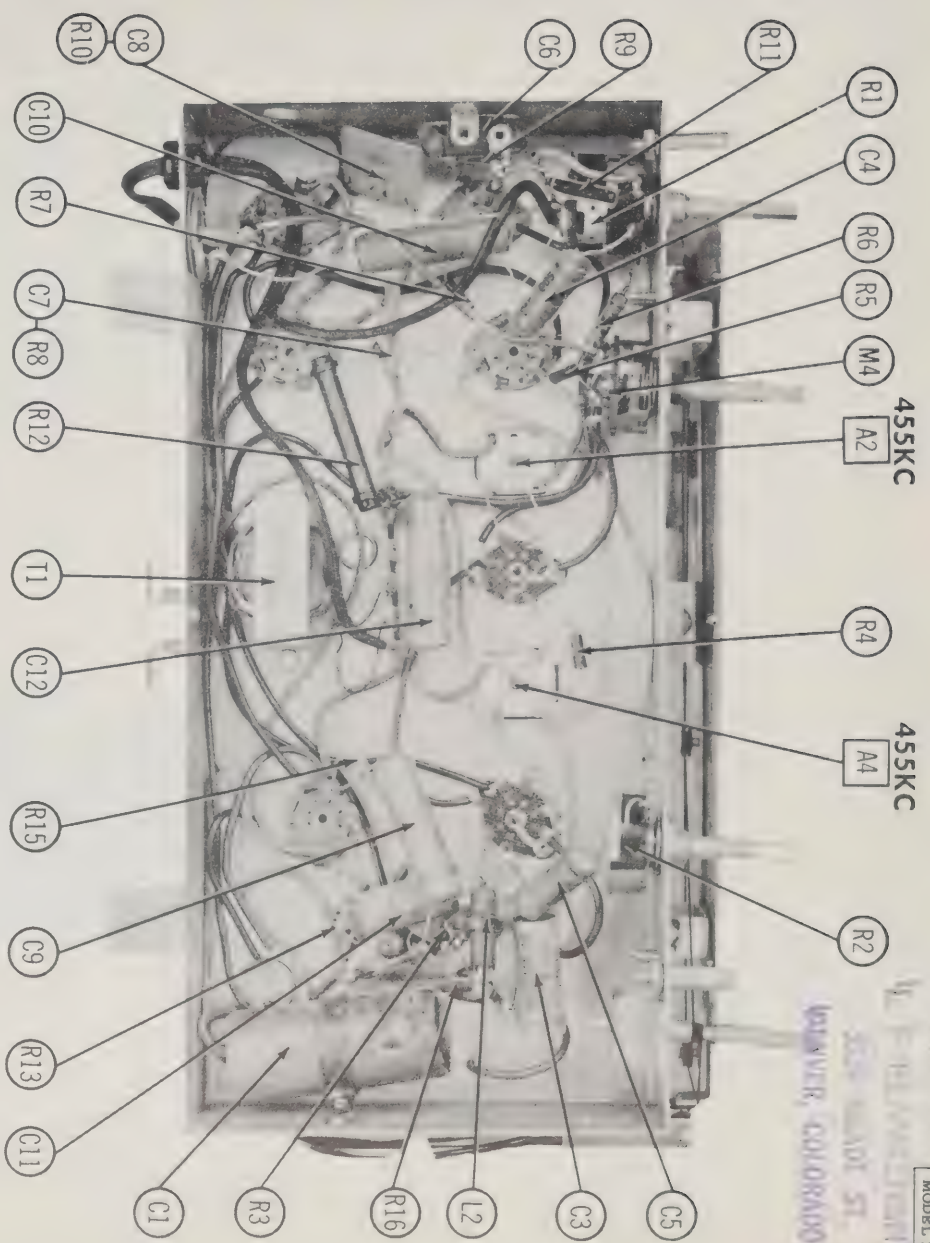
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					JACKSON PART No.		
M3	Bayonet	6-8	.25	Brown			Type #47

MISCELLANEOUS

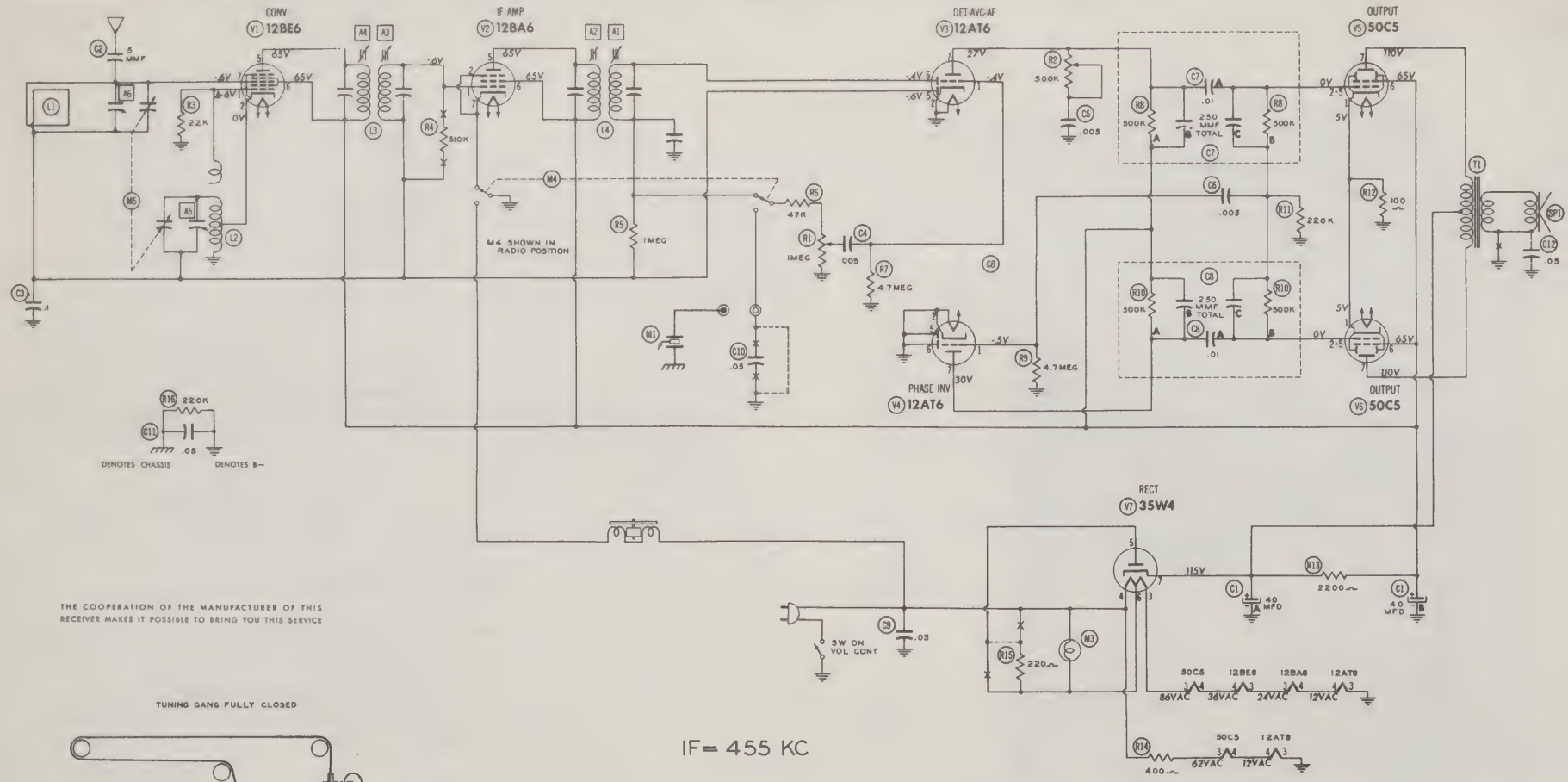
ITEM No.	PART NAME	JACKSON PART No.	NOTES
M4 M5	Switch 2 Gang Var. Cap.		Radio - Phono (26-452MMF, 31-200MMF)

CHASSIS—BOTTOM VIEW



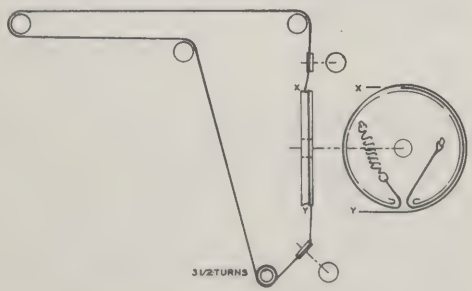
JACKSON MODEL 254

SET 173 FOLDER 8



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	24Ω	36Ω	†2.2KΩ	†2.2KΩ	2Meg
V 2	12BA6	2Meg	0Ω	24Ω	12Ω	†2.2KΩ	†2.2KΩ	0Ω
V 3	12AT6	4.7Meg	0Ω	0Ω	12Ω	2Meg	1Meg	†500KΩ
V 4	12AT6	4.7Meg	0Ω	0Ω	12Ω	0Ω	0Ω	†500KΩ
V 5	50C5	100Ω	720KΩ	62Ω	12Ω	720KΩ	†2.2KΩ	†115Ω
V 6	50C5	100Ω	720KΩ	75Ω	36Ω	720KΩ	†2.2KΩ	†115Ω
V 7	35W4	INF	INF	75Ω	92Ω	92Ω	92Ω	60KΩ

ALL MEASUREMENTS TAKEN IN "RADIO" POSITION
† MEASURED FROM PIN 7 OF V7
▲ TAKEN WITH VACUUM TUBE VOLTMETER

173-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

MOTOROLA MODELS 21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B, (Ch. TS-351, A)

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MOTOROLA MODELS 21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B, (Ch. TS-351, A)

MODEL 21F1

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

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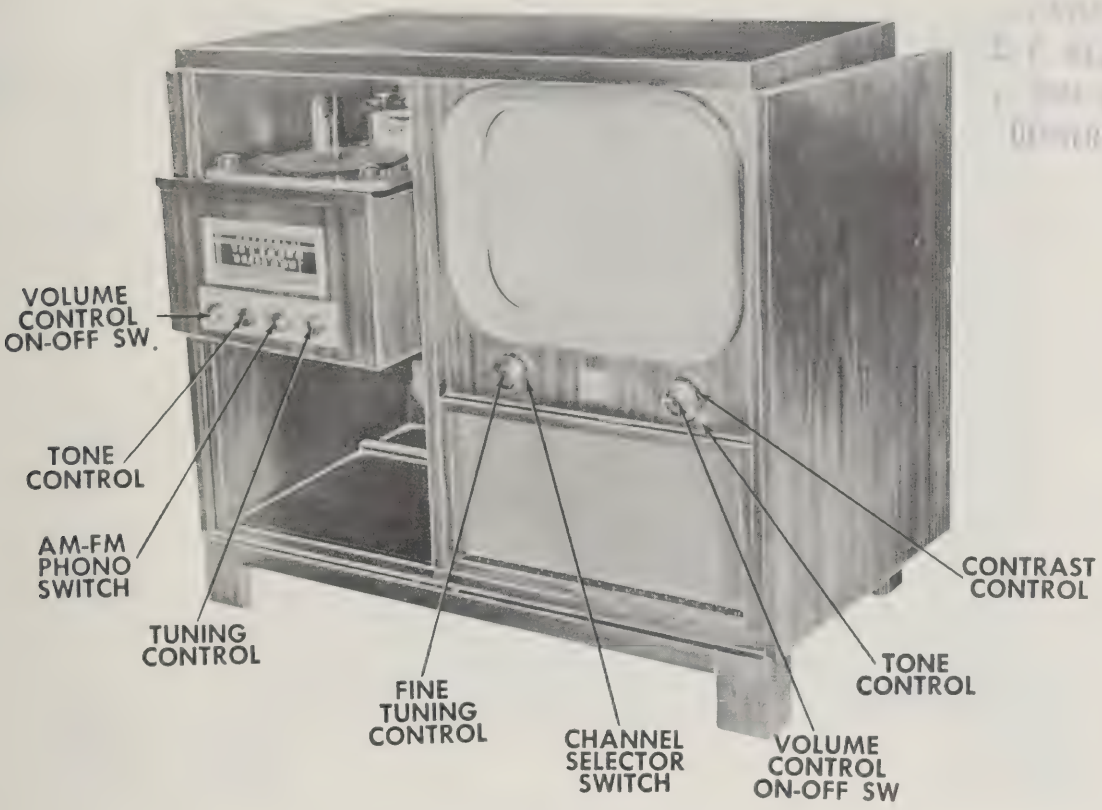
DATE 7-52 SET 173 FOLDER 9

MOTOROLA MODELS 21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B, (Ch. TS-351, A)



MOTOROLA 21F1

TRADE NAME	Motorola Models 21F1, 21F1B, 21K1, 21K1B, 21K2, 21K2B, 21T1, 21T1B, 21T2, 21T2B, (Ch. TS-351, A) (Radio Ch. HS-316)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	TV-AM-FM-Phono Combination
TUBES	Twenty-Six
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.4 Amp. @117 VAC (TV), 163 Amp. @117 Volts AC (Radio)
TUNING RANGE	Channels 2 thru 13(TV), 535-1620KC (AM), 88-108MC (FM)

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FOR SERVICE INFORMATION ON RECORD CHANGER SEE MODEL RC36 PHOTOFACT SET 147 FOLDER 8.

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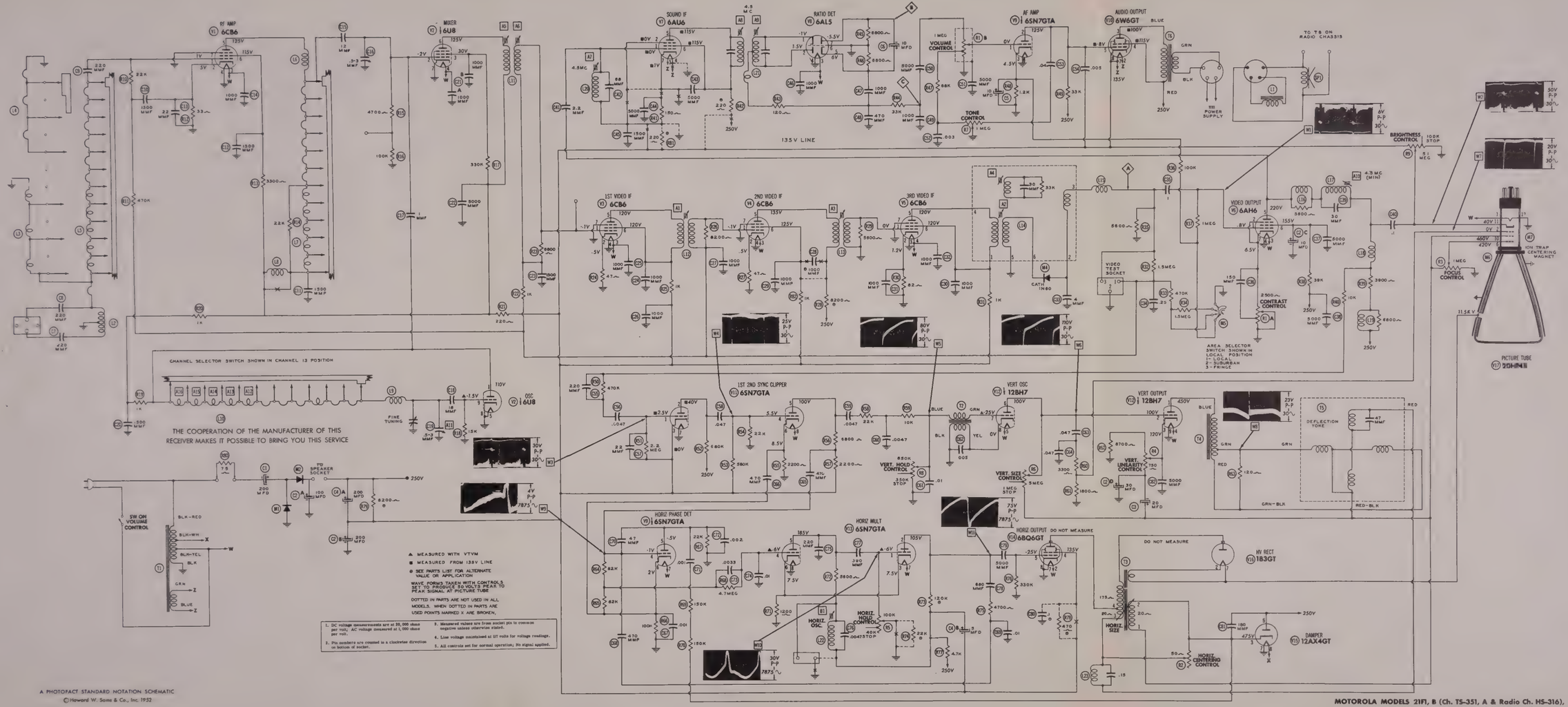
DATE 7-52 SET 173 FOLDER 9

MOTOROLA MODELS 21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B, (Ch. TS-351, A)



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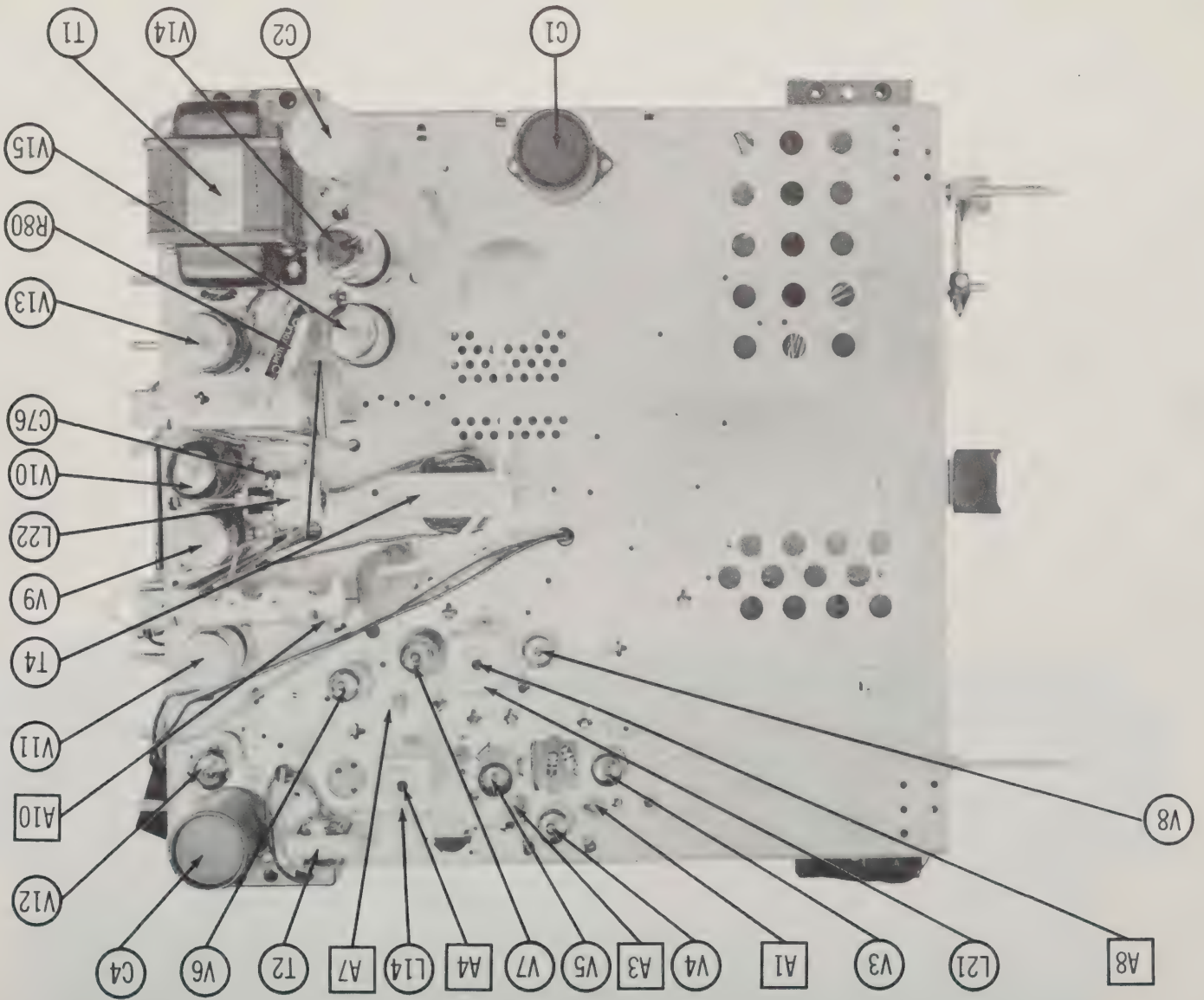
MOTOROLA MODELS 21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B (Ch. TS-351, A)

MOTOROLA MODELS 21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B (Ch. TS-351, A)

CHASSIS TOP VIEW



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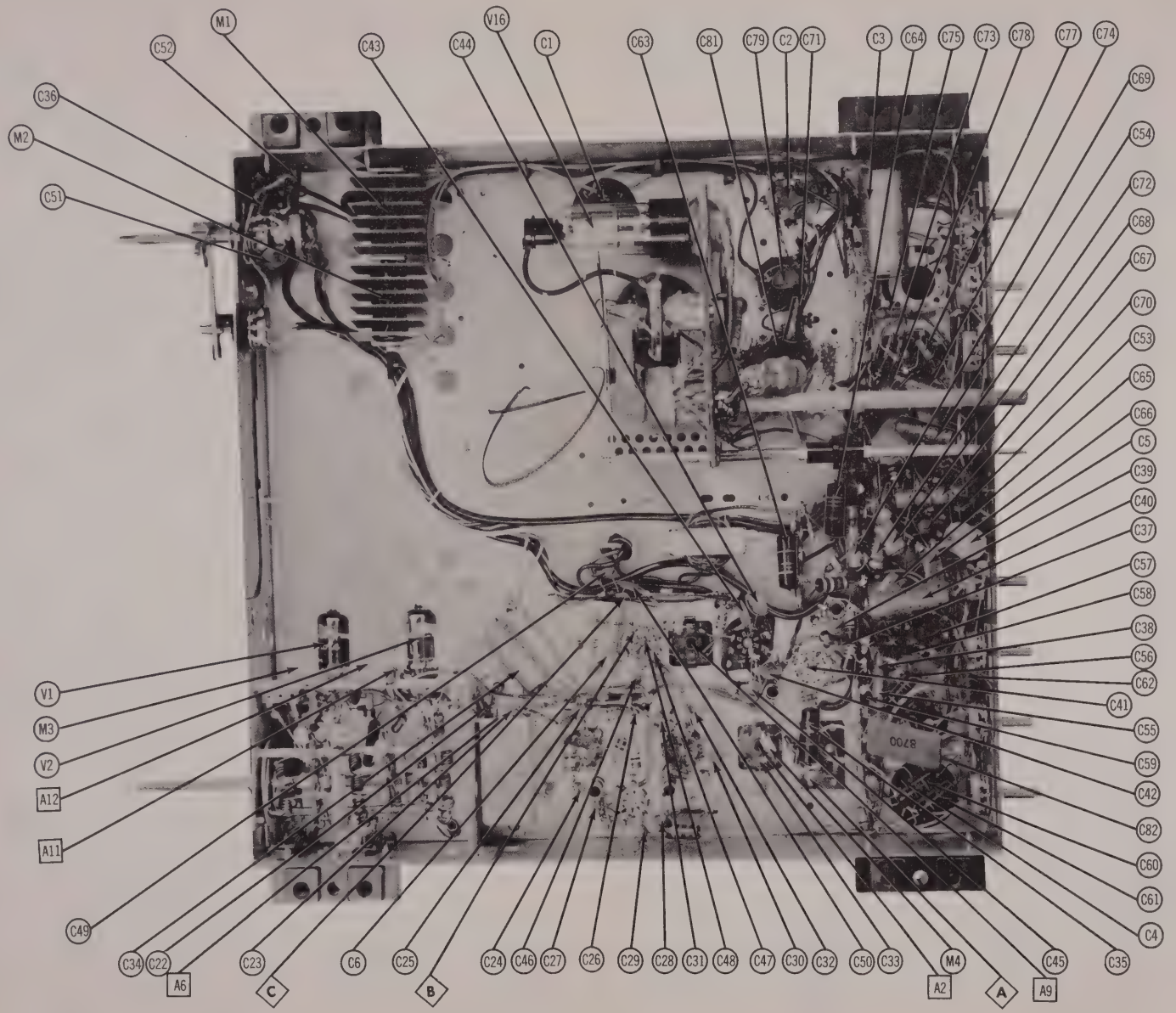

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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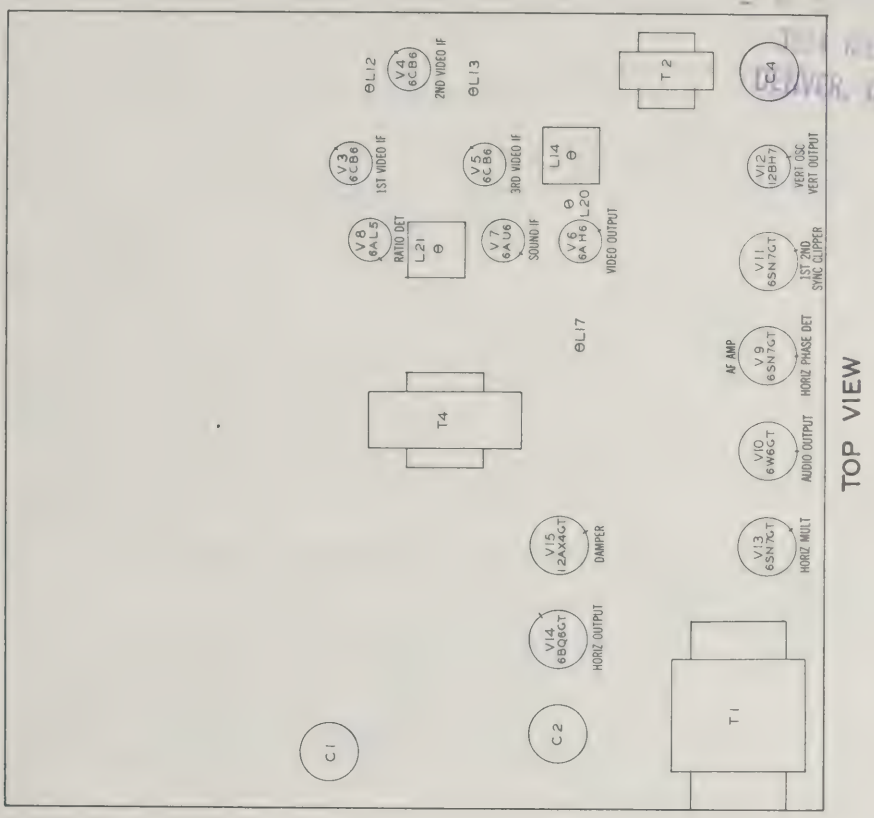
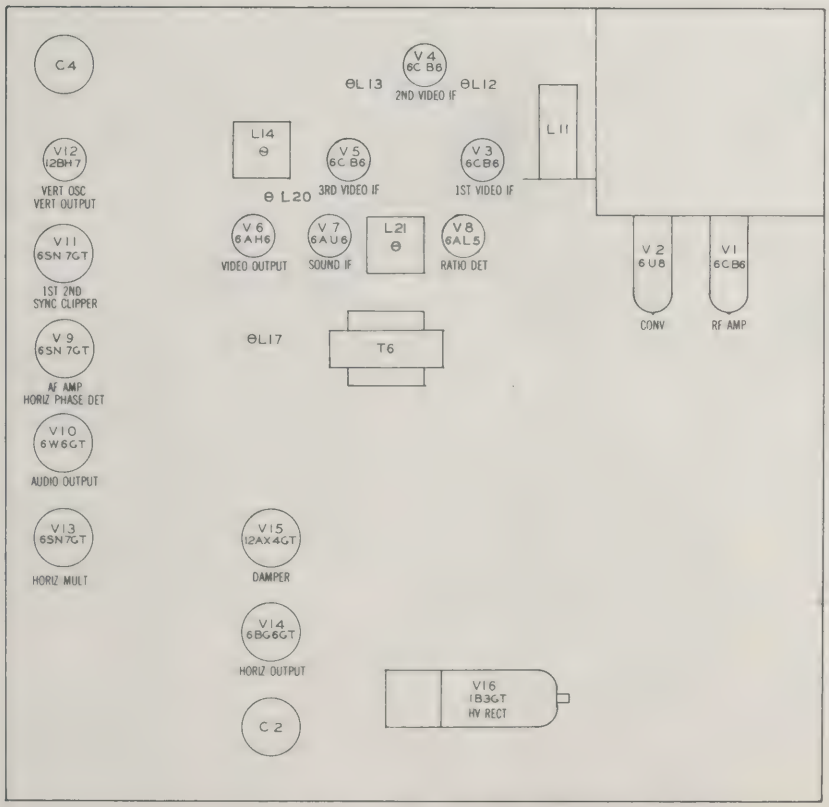


TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Remove the horizontal output tube V14 from its socket. This will eliminate the high voltage shock hazard and reduce scope interference during alignment.
Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery through 47KΩ to pin 1 of the video test socket. Connect the positive lead to chassis.
Turn the Area Selector Switch to "Local"

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis.	24.6MC (10MC Swp)	26.6MC	Any non-interfering channel.	Vert. amp. thru 47KΩ to point (A) Low side to chassis.	A1, A2	Adjust A1 to place the 26.6MC. marker at 50% response on the high frequency portion of the response curve, fig.1. At the same time adjust A2 to maintain a flat top or symmetrical response curve. If curve is distorted or unstable disable the local oscillator by connecting a short across the oscillator inductance, position 2 to position 13 on the band switch.
2.	"	"	"	22.9MC	"	"	A3	Adjust A3 to place the 22.9MC marker at 50% response on the low frequency side of the response curve, fig. 1. At the same time adjust A2 to maintain a flat tap or symmetrical response curve.
3.	"	"	"	21.9MC	"	"	A4	Adjust for MINIMUM response at 21.9MC
4.	"	High side to pin 2 (grid), of 6U8 (V2). Low side to chassis.	"	22.9MC 26.4MC	"	"	A5, A6	Adjust for response curve as per fig. 2 with markers within limits as shown. Make certain that the slugs are tuned away from the center of the coil.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set contrast control to maximum clockwise position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to Point (A) Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B) Common to chassis.	A7, A8	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to Point (C) Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450 KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point (B) Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 3.
6.	"	"	"	"	"	Vert. amp. to point (C) Low side to chassis.	A9	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 4. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to Point (A) Low side to chassis.	4.5MC (unmod.)	Any	DC probe thru crystal diode detector (fig.5) to pin 11 of picture tube. Common to chassis.	A10	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

Remove the local oscillator shunt, if used previously, restoring the oscillator to normal operation.
Set the fine tuning trimmer to mid-capacity.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	197.75MC	10	Vert. amp. thru 47KΩ to point (A) Low side to chassis.	A11	Adjust to place the sound marker slightly higher in frequency than the 21.9MC trap dip. This allowance is necessary to compensate for the fact that the bottom shield is off the tuner. When the shield is replaced the sound marker will move down into the notch.
9.	"	"	213MC (10MC Swp)	215.75MC	13	"	L9	Check all high band channels for sound marker slightly higher in frequency than 21.9MC trap dip with fine tuning trimmer within 30 degrees of mid-capacity. If more than 30 degree change in trimmer is necessary for correct marker placement adjust L9 by compressing or expanding coil turns for desired marker placement. Recheck A11 on channel 10 and readjust as in step 8, if necessary.
			207MC (10MC Swp)	209.75MC	12			
			201MC (10MC Swp)	203.75 MC	11			
			189MC (10MC Swp)	191.75MC	9			
			183MC (10MC Swp)	185.75MC	8			
			177MC (10MC Swp)	179.75MC	7			
10.	"	"	85MC (10MC Swp)	87.75MC	6	"	A12	Set fine tuning trimmer 30 degrees from mid-capacity. Compress or expand A12 to place sound marker slightly higher in frequency than 21.9MC trap dip.
11.	"	"	79MC (10MC Swp)	81.75 MC	5	"	A13	Compress or expand to place sound marker slightly higher in frequency than 21.9 MC trap dip with fine tuning trimmer not more than 15 degrees from position in step. 10.
			69MC (10MC swp.)	71.75MC	4		A14	
			63MC (10MC Swp)	65.75MC	3		A15	
			57MC (10MC Swp)	59.75MC	2		A16	

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

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AM ALIGNMENT

Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
12	.1MFD	High side to pin 7 (grid) of 6BA7 (V19). Low side to chassis.	455KC (400~Mod.)	AM	Tuning gang fully open	Across voice coil	A17, A18 A19, A20	Adjust for maximum output.
13	"	"	1620KC	"	"	"	A21	"
14	"	High side to pin 1 (grid) of 6AU6 (V18). Low side to chassis.	1400KC	"	Tune to 1400KC signal	"	A22	"
15	"	Loop	"	"	"	"	A23	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point D to chassis. The junction of these two resistors is alignment point F as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
16	.001MFD	High side to pin 1 (grid) of 6BA6 (V20). Low side to chassis.	10.7MC (unmod.)	FM	Tuning gang fully open.	DC probe to Point D. Common to chassis.	A24, A25, A26	Adjust for maximum deflection. Attenutate generator to maintain 5 volts or less reading.
17	"	High side to pin 7 (grid) of 6BA7 (V19). Low side to chassis.	"	"	"	"	A27, A28	"
18	"	"	"	"	"	DC probe to Point E. Common to Point F.	A29	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450 KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
16	.001MFD	High side to pin 1 (grid) of 6BA6 (V20). Low side to chassis.	10.7MC (450KC swp).	FM	Tuning gang fully open.	Vert. amp. to Point D. Low side to chassis.	A24, A25, A26	Disconnect stabilizor capacitor C83. Adjust for maximum amplitude and symmetry as per fig. 6.
17	"	High side to pin 7 (grid) of 6BA7 (V19). Low side to chassis.	"	"	"	"	A27, A28	"
18	"	"	"	"	"	Vert. amp. to Point E. Low side to chassis.	A29	Reconnect capacitor C83. Adjust so that 10.7MC occurs at center of crossover lines as per fig. 7. SLIGHTLY retouch A24 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

Before performing step 20, preset A34 and A35 by turning each adjustment nut counter clockwise until the cores are at the bottom of the pipes, then turn two turns clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
19	270Ω carbon resistor	High side thru 270Ω to FM antenna terminal. Low side to chassis.	105MC (unmod)	FM	105MC	DC probe to Point D.	A30	Adjust for maximum deflection.
20	"	"	90MC	"	Tune to 90MC signal	"	A31, A32	"
21	"	"	105MC	"	Tune to 150MC signal	"	A33, A34	"

Repeat steps 20 and 21 until no further improvement can be made.

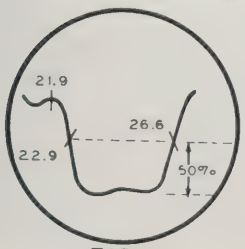


FIG. 1

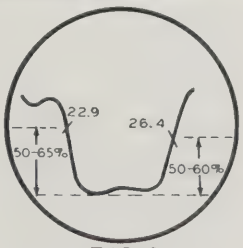


FIG. 2

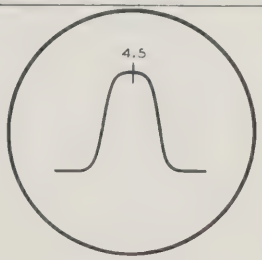


FIG. 3

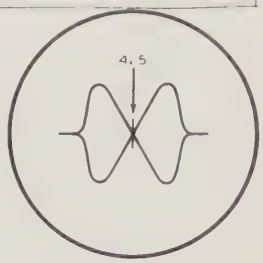


FIG. 4

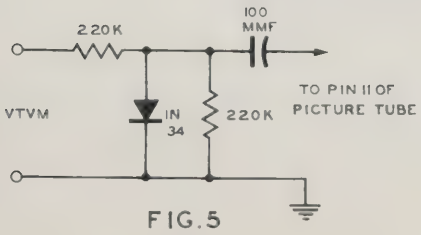


FIG. 5

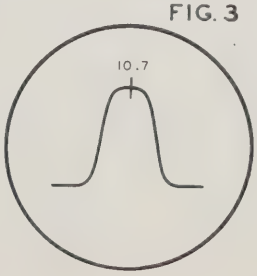


FIG. 6

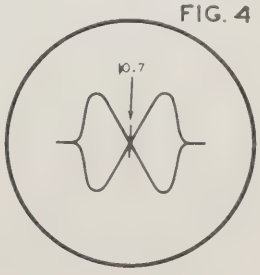


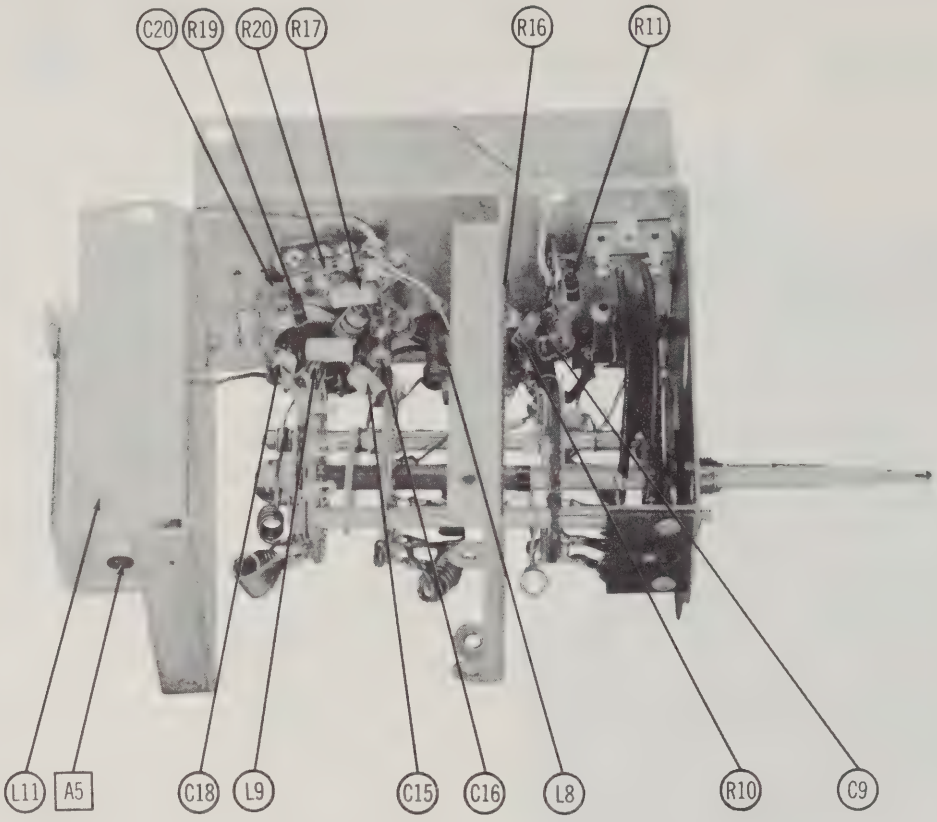
FIG. 7

RESISTANCE MEASUREMENTS

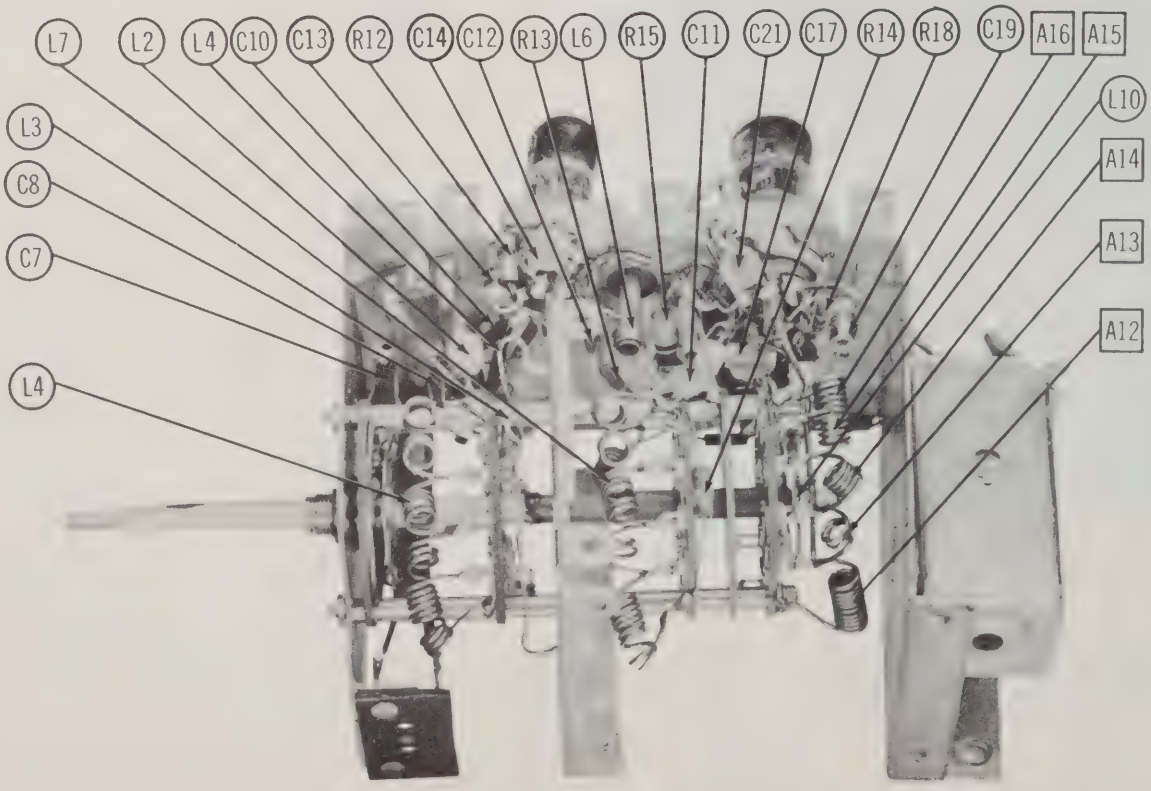
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	2Meg	33Ω	.1Ω	0Ω	■220Ω	■3.5KΩ	0Ω		
V 2	6U8	■2.2KΩ	105KΩ	■330KΩ	.1Ω	0Ω	■220Ω	0Ω	0Ω	15KΩ
V 3	6CB6	1.5Meg	47Ω	.1Ω	0Ω	■1KΩ	■1KΩ	0Ω		
V 4	6CB6	1.5Meg	47Ω	.1Ω	0Ω	†8.3KΩ	■1KΩ	0Ω		
V 5	6CB6	.4Ω	82Ω	0Ω	.1Ω	■1KΩ	■1KΩ	0Ω		
V 6	6AH6	1.1Meg	500Ω	.1Ω	0Ω	†4KΩ	†39KΩ	500Ω		
V 7	6AU6	■1.2Ω	■0Ω	■.1Ω	■0Ω	†302Ω	†302Ω	■150Ω		
V 8	6AL5	INF	INF	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 9	6SN7GT	225KΩ	†33KΩ	1.2KΩ	265KΩ	22KΩ	100KΩ	.1Ω	0Ω	
V 10	6W6GT	0Ω	■.1Ω	†270Ω	†190Ω	†33KΩ	182KΩ	■0Ω	60KΩ	
V 11	6SN7GT	■2.2Meg	†680KΩ	■0Ω	22KΩ	■9KΩ	2.2KΩ	0Ω	.1Ω	
V 12	12BH7	#740Ω	#2.5Meg	9KΩ	.1Ω	.1Ω	#2.5Meg	500KΩ	53Ω	0Ω
V 13	6SN7GT	80KΩ	†120KΩ	1.2KΩ	4.9Meg	†10KΩ	1.2KΩ	.1Ω	0Ω	
V 14	6BQ6GT	INF	.1Ω	†120KΩ	■0Ω	330KΩ	22KΩ	0Ω	0Ω	TOP CAP #50Ω
V 15	12AX4GT	INF	#33Ω	270KΩ	INF	†82Ω	#300KΩ	0Ω	.2Ω	
V 16	1B3GT	PINS 1 THRU 8 HAVE INF RESISTANCE								TOP CAP #225Ω
V 17	20HP4B	.1Ω	1.8KΩ	PIN 6 300KΩ	PIN 10 #20Ω	PIN 11 625KΩ	PIN 12 0Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM OUTPUT OF M2
■ MEASURED FROM 135 VDC LINE
MEASURED FROM PIN 3 OF V15

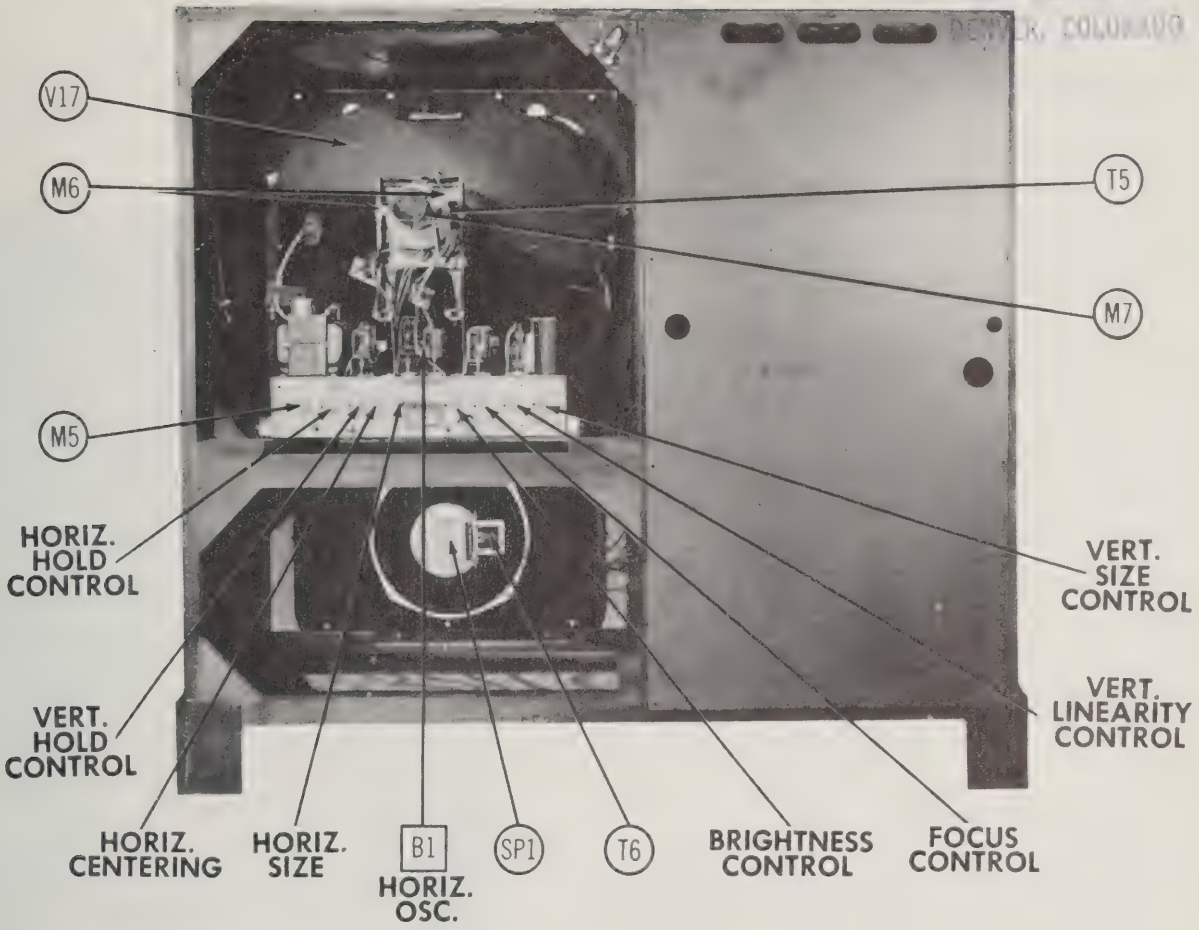


RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

PROPERTY OF
U.S. GOVERNMENT
DENVER, COLORADO



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

TV

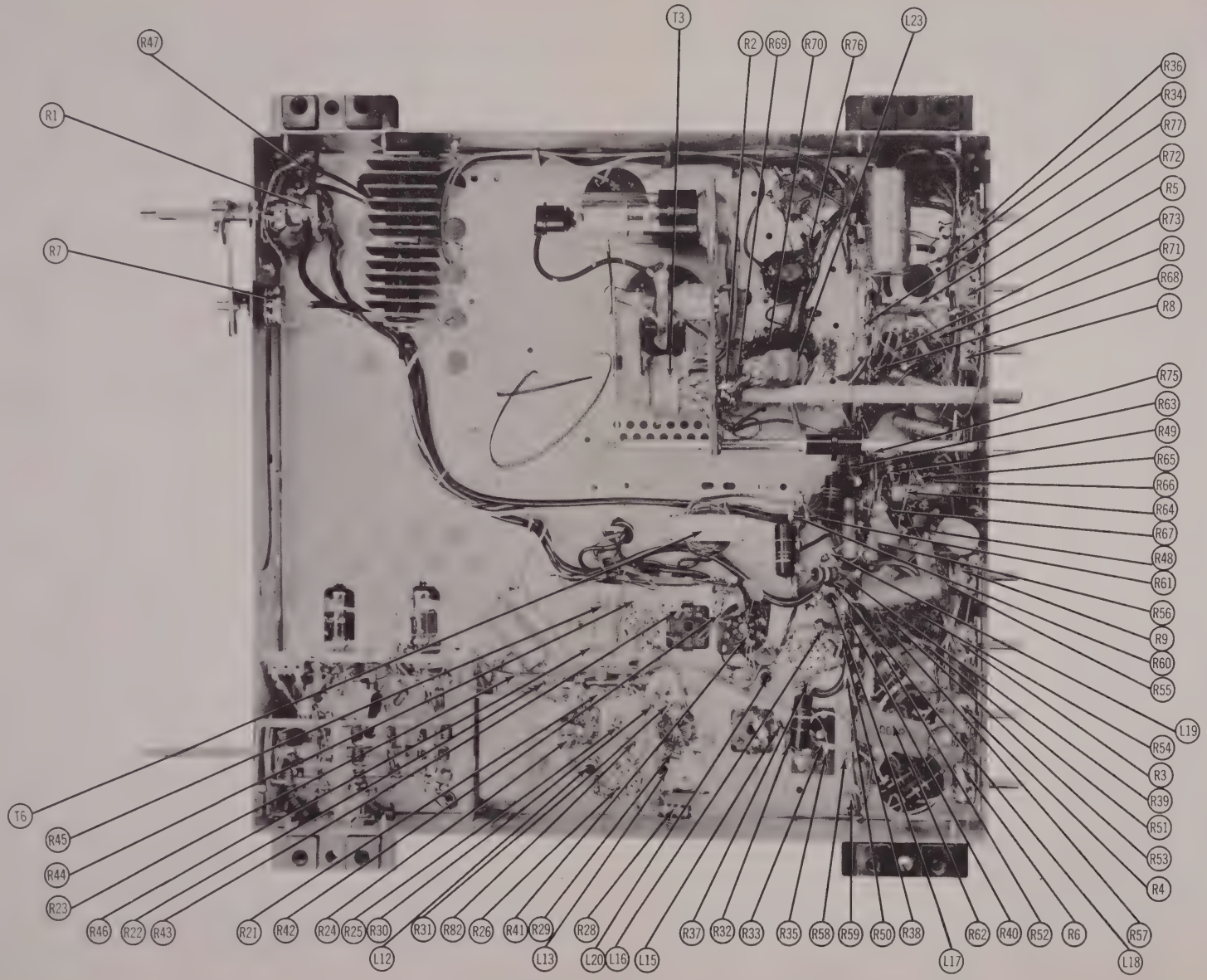
1. Remove 5 push on type control knobs from front panel.
2. Remove 5 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws and remove antenna terminals.
4. Disconnect speaker plug.
5. Remove 4 chassis bolts. Remove chassis.

NOTE : FOR PICTURE TUBE REMOVAL IT IS NECFSSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

RADIO

1. Remove 4 push on type Control Knobs from front Panel.
2. Remove 9 wood screws. Remove Rear Cover
3. Disconnect AC input to Radio.
4. Disconnect Phono and Audio Plugs.
5. Disconnect AM and FM Antenna Lead and Speaker.
6. Remove 4 nuts holding Speaker. Remove Speaker.
7. Remove 3 chassis bolts. Remove Chassis.

PROPERTY
L. F. BLANK
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

The horizontal hold control should have a sync range of approximately 70 degrees. If the control is too critical adjustment of the horizontal oscillator slug (B1) may be necessary.

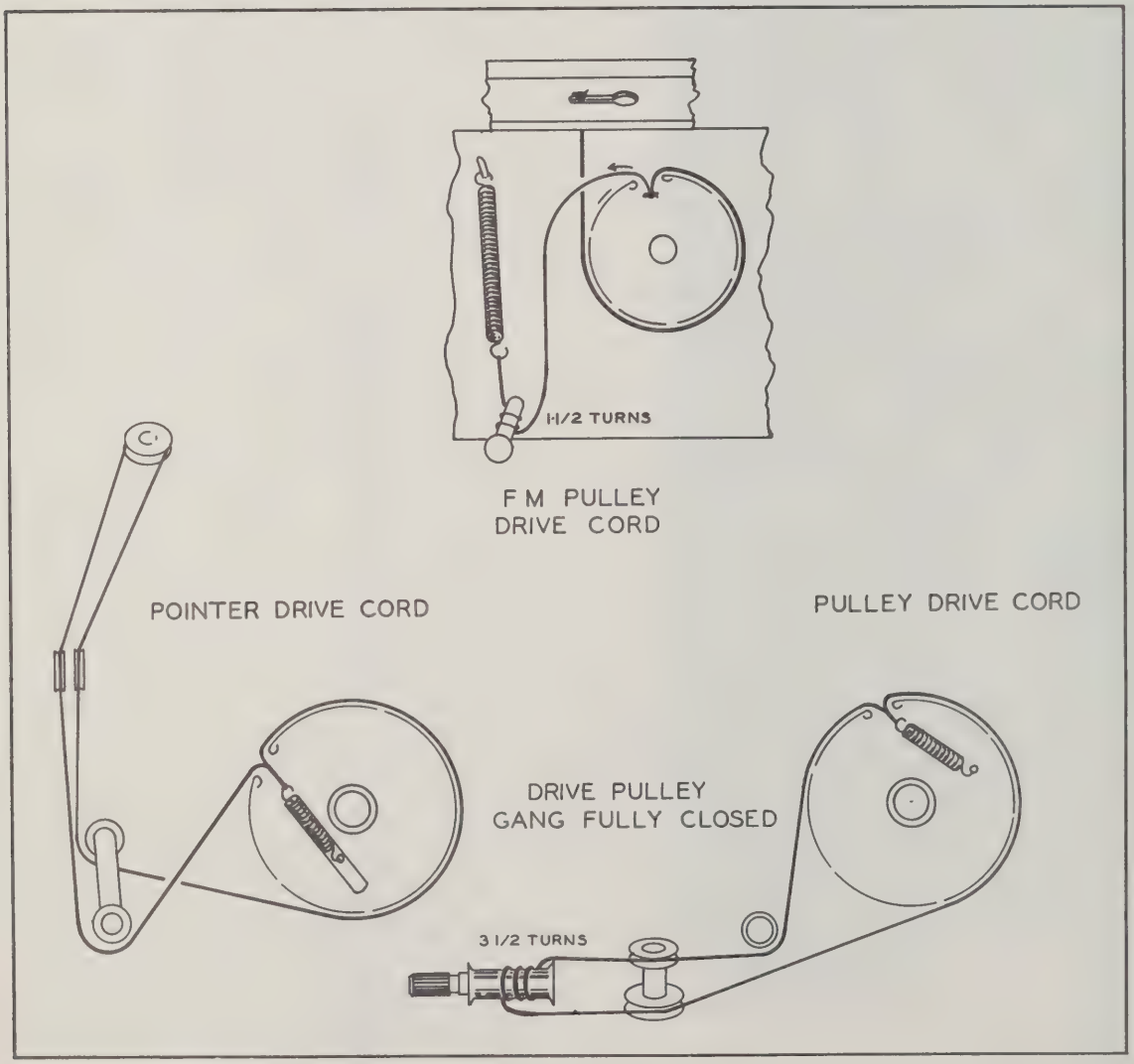
Shunt the horizontal oscillator coil, L22, with a .25MFD, 400 volt capacitor. This can be done with the chassis in the cabinet by placing the capacitor across pins 5 and 6 of the test socket on the rear of the chassis, or on sets which do not have this socket, across the 2 pin receptacle, also found on the rear of the chassis.

With the horizontal centering control, move the picture to the left until the right edge of the raster is seen.

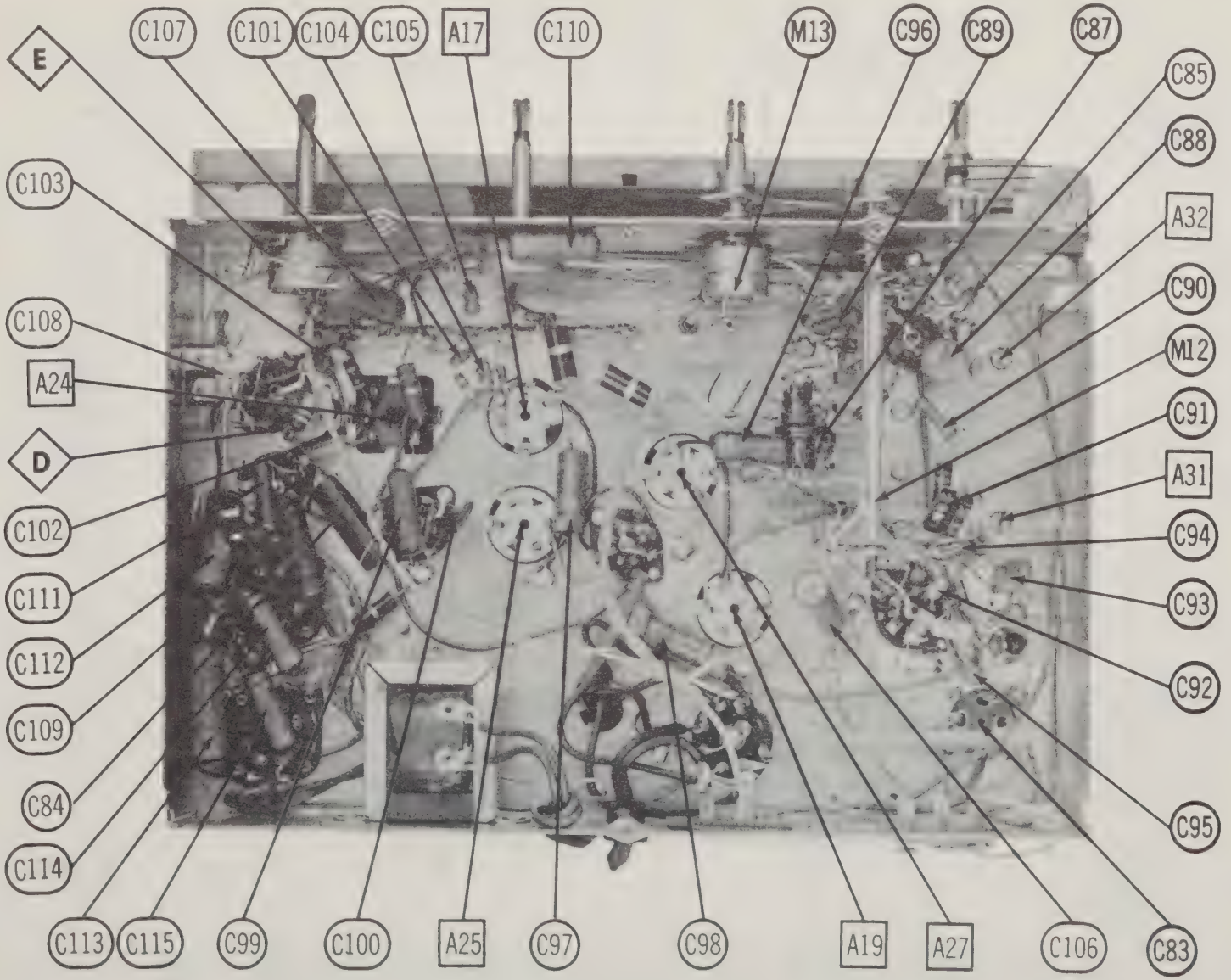
Adjust the horizontal hold so that about a quarter inch of blanking pulse appears at the right edge of the picture.

Remove the .25MFD capacitor and adjust B1 until the same amount of blanking pulse as noted above can be seen.

Adjust the horizontal size adjustment for a picture slightly wider than enough to fill the picture mask.



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6CB6	6CB6	7CH	
V2	Converter	6U8	6U8	9-AE	
V3	1st. Video IF Amp.	6CB6	6CB6	7CH	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CH	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CH	
V6	Video Output	6AH6	6AH6	7BK	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AF Amplifier - Horiz. Phase Det.	6SN7GTA	6SN7GTA	8BD	
V10	Audio Output	6W6GT	6W6GT	7AC	
V11	1st. & 2nd. Syn Clipper	6SN7GTA	6SN7GTA	8BD	
V12	Vert. Oscillator-Vert. Output	12BH7	12BH7	9A	
V13	Horiz. Mult	6SN7GTA	6SN7GTA	8BD	
V14	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V15	Damper	12AX4GT	12AX4GT	4CG	
V16	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V17	20HP4B	20HP4		12C	① Circuit changes necessary
		20HP4A ①		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	200	150	23B702779			UP101015		TVL-1431	Voltage Doubler
C2A	100	300	23B712068	E4D491		UPT436		TVL-4561	▲ Filter
B	200	150							▲ Decoupling
C	10	300							■ Video Amp. Screen
D	30	150							Vert. Output Cathode
C3	20	450	23K10667	PRS450/20		BR2045A		TVA-1709	Vert. Output Decoupling
C4A	200	150	23B710941	E4B257		UPE101015		TVL-1431	▲ Filter
B	5	150				BR415		TVA-1402	▲ Horiz. MV Dec.
C5	10	50	23A90205	PRS50/10		BR105		TVA-1304	AF Amp. Cathode
C6	10	50	23A90205	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C7	220		21K77375	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C8	220		21K77375	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C9	220		21K400941	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C10	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	AGC Filter
C11	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	RF Amp. Plate Dec.
C12	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	RF Amp. Screen Bypass
C13	22		21K400942	SI22	D6-220		GP1K-220	5GA-Q22	RF Amp. Cathode
C14	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	RF Amp. Fil. Bypass
C15	12		21K114073				N330K-120		RF Coupling
C16	.5-3		1X710954		829-3				Variable Trimmer
C17	1		21K114071		TCZ-1		NP0K-010		Osc. Coupling
C18	18		21K711246						Osc. Grid Cap.
C19	.5-3		1X710954		829-3				Variable Trimmer
C20	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	RF Bypass
C21A	1000		21K400937	BPD-2X001	DD-2-102	TM5DD1	812-001	5HK-2D1	Conv. Fil. Bypass
B	1000								Mixer Screen Bypass
C22	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Mixer Plate Dec.
C23	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	AGC Filter
C24	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	1st. Video IF Dec.
C25	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	1st. Video IF Fil.
C26	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	RF Bypass
C27	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	AGC Filter
C28	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	2nd. Video IF Plate *
C29	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	2nd. Video IF Screen
C30	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	3rd. Video IF Dec.
C31	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	3rd. Video IF Cathode
C32	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	3rd. Video IF Fil.
C33	4		21K38951				NP0K-040		Video Det. Filter
C34	.25	100	8R9810	P488-25		PJ2P25		2TM-P25	AGC Filter
C35	.1	200	8R490210	P288-1	DF-104	PJ2P1		2TM-P1	Video Coupling
C36	150		21K691948	SII50	D6-151	TM5T15	GP2K-151	5GA-T15	Video Output Cathode
C37	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Video Output Screen
C38	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C39	30		21K470329						Fixed Trimmer
C40	.1	400	8R9862	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C41	2.2		21A478274		TCZ-2.2		NP0K-2R2		Sound IF Coupling
C42	68		21R400928				N470L-680		Fixed Trimmer
C43	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Dec.
C44	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Cathode
C45	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	Sound IF Grid Dec.
C46	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	5HK-D1	Ratio Det. Fil.
C47	1000		21K780599	SII000	D6-102	TM5D1	GP2L-102	5HK-D1	Diode Load Cap.
C48	470		21K400940	SI470	D6-471	5R5T5	GP2K-471	5GA-T47	RF Bypass
C49	1000		21K780599	SII000	D6-102	TM5D1	GP2L-102	5HK-D1	De-emphasis
C50	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C51	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Volume Cont. Isolation
C52	.003	600	8R9820	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Tone Comp.
C53	.04	600	8R490258	P688-04		PTE6S4		6TM-S4	Tone Comp.
C54	.005	600	8R9869	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Grid
C55	220		21K77375	SI220	D6-221	5R5T25	GP2K-221	5GA-T22	Sync Coupling
C56	.0047	400	8R490249	P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Sync Coupling
C57	22		21K400942	SI22	D6-220	5R5Q25	GP1K-220	5GA-Q22	Sync Clipper Grid
C58	.047	400	8R490232	P488-047	DF-503	PTE4S47		4TM-S47	Sync Coupling
C59	.0047	400	8R490222	P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Vert. Sync Coupling
C60	.0047	400	8R490222	P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Vert. Integrator Net.
C61	.01	400	8R490226	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Vert. Integrator Net.
C62	.005	600	8R9869	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Fixed Trimmer

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C63	.047	400	8R490232	P488-047		PTE4S47		4TM-S47	Vert. Discharge
C64	.047	400	8R490232	P488-047	DF-503	PTE4S47		4TM-S47	Integrator Net.
C65	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sync Coupling
C66	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sync Coupling
C67	.001	600	8R9866	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Voltage Divider
C68	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Feedback
C69	.01	400	8R9858	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Voltage Divider
C70	47		21R14207	S147N750	TCN-47		N750K-470	5TCU-Q47	Horiz. Feedback
C71	.001	1000	8R490268	P1088-001		PTE16D1		MB-D1	Horiz. Feedback
C72	.002	600	8R9867	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Voltage Divider
C73	.0033	400	8R490220	P488-.0033	D6-332	PTE4D3	GP2-333-332	6TM-D3	Horiz. AFC Coupling
C74	.01	400	8R9858	P488-.01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Horiz. AFC Filter
C75	220		21K77375	S1220	D6-221	PTE6D47	GP2K-221	5GA-T22	Horiz. MV Plate
C76	.0047	600	8R490222	P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Fixed Trimmer
C77	390	500	21R114740	1469-0004		5R5T4		MS-34	Horiz. MV Feedback
C78	680	500	21R114781	1479-0007		2R5T7		MS-37	Horiz. Discharge
C79	5000		21R115312	BPD-005	DD-502	TMS5D5	811-005	5HK-D5	Horiz. Sweep Coupling
C80	.1	600	8R9874	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen *
C81	180	3000	21R701873						Damper Plate
C82	5000		21R115312	BPD-005	DD-502	TMS5D5	801-005	5HK-D5	Vert. Output Cathode

* Not used in all models.

CONTROLS

ITEM No	RATING RESIST-ANCE	RATING WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2500Ω	½	18K702864	QF-322 *	RTV-344		Contrast Control - Tapped ④ 2000Ω - Panel
B	1Meg	½					Volume Control & SW - Tapped ③ 300KΩ -Rear
R2	50Ω	1	LX711613				Horiz. Centering Control - Wire Wound
R3A	1Meg	½	18A711225	Q11-137	AG-61-S	AB-69	Focus Control
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Attach to R3A per instructions
R4A	750Ω	½	18A702475		AG-8-S		Vertical Linearity Control
B	Shaft		Not Req.		RS-2		Attach to R4A per instructions
R5A	100KΩ	½	18A702468	Q11-128	AG-49-S	AB-40	Horiz. Hold Control - See Note 1
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Attach to R5A per instructions
R6A	5Meg	½	18A702443	Q11-141	AG-85-S	AB-67	Vertical Size Control - See Note 2
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Attach to R6A per instructions
R7A	1Meg	½	[illegible]	Q11-137	AG-61-S		Tone Control
B	Shaft		Not Req.	PQ	RS-2		Attach to R7A per instructions
R8A	850KΩ	½	18K711278	Q11-137	AG-61-S		Vert. Hold Control - See Note 3
B	Shaft		Not Req.	Not Req.	RS-2		Attach to R8A per instructions
R9A	5.1Meg	½	[illegible]		AG-85-S		Brightness Control - See Note 4
B	Shaft				RS-2		Attach to R9A per instructions

Note 1. Add a 40KΩ Resistor in series with clockwise terminal and Pin #1 of V13
Note 2. Add a 1Meg Resistor in series with clockwise terminal and Positive Side of C3
Note 3. Add a 350KΩ Resistor in series with clockwise terminal and Ground
Note 4. Add a 100KΩ Resistor in series with clockwise terminal and Ground
* CONCENTRIKIT EQUIVALENT -KIT K-4, BASE ELEMENTS & SHAFTS B17-111X & P1-212 (Panel), B13-137X & R4-228 (Rear) & SWITCH 76-1

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R10	22KΩ	½	6R6397		RF Amp. Grid
R11	470KΩ 20%	½	6R6032	BTS-470K	AGC Network
R12	33Ω	½	6R2035		RF Amp. Cathode
R13	3300Ω	½	6R6036	BTS-3300	RF Amp. Screen
R14	22KΩ	½	6R6397		RF Coil Shunt
R15	4700Ω 20%	½	6R6039	BTS-4700	Mixer Grid
R16	100KΩ 20%	½	6R6975	BTS-100K	Mixer Grid
R17	330KΩ 20%	½	6R6014		Mixer Screen
R18	15KΩ 20%	½	6R2119	BTS-15K	Osc. Grid
R19	1000Ω 20%	½	6R6301	BTS-1000	Osc. Plate
R20	1000Ω 20%	½	6R6301	BTS-1000	Osc. Plate Decoupling
R21	220Ω 20%	½	6R3933	BTS-220	Decoupling
R22	1000Ω	½	6R6301	BTS-1000	AGC Network
R23	6800Ω	½	6R6683	BTS-6800	1st. Video IF Coil Shunt
R24	47Ω	½	6R5550		1st. Video IF Amp. Cathode
R25	1000Ω	½	6R6301	BTS-1000	1st. Video IF Amp. Decoupling
R26	8200Ω	½	6R2004		2nd. Video IF Coil Shunt
R27	47Ω	½	6R5550		2nd. Video IF Amp. Cathode
R28	8200Ω	2		BTS-8200	2nd. Video IF Amp. Decoupling - See Note 3
R29	5600Ω	½	6R6117		3rd. Video IF Coil Shunt
R30	82Ω	½	6R2035	BTS-82	3rd. Video IF Amp. Cathode
R31	1000Ω	½	6R6301	BTS-1000	3rd. Video IF Amp. Decoupling
R32	1.5Meg	½	6R6460	BTS-1.5Meg	AGC Network
R33	470KΩ 20%	½	6R6032	BTS-470K	AGC Network
R34	1.5Meg 20%	½	6R3968	BTS-1.5Meg	AGC Network
R35	5600Ω	½	6R6117	BTS-5600	Video Det. Load
R36	100KΩ	½	6R6075	BTS-100K	Bias Network
R37	1Meg	½	6R6046	BTS-1Meg	Video Output Grid
R38	39KΩ	½	6R40102	BTA-39K	Video Output Screen
R39	3900Ω	2	6R476803	BTS-3900	Video Output Plate
R40	10KΩ 20%	½	6R6054	BTS-10K	Isolation
R41	150Ω 20%	½	6R3992	BTS-150	Sound IF Amp. Cathode
R42	220Ω 20%	½	6R3933	BTS-220	Sound IF Amp. Decoupling - See Note 1
R43	120Ω	½	6R5551	BTS-120	Balancing
R44	33KΩ 20%	½	6R6012	BTS-33K	De-emphasis
R45	6800Ω	½	6R6428	BTS-6800	Ratio Det. Diode Load
R46	6800Ω	½	6R6428	BTS-6800	Ratio Det. Diode Load
R47	68KΩ 20%	½	6R6001	BTS-68K	Tone Compensation
R48	1200Ω	½	6R6383	BTS-1200	AF Amp. Cathode
R49	33KΩ	½	6R6400	BTA-33K	AF Amp. Plate
R50	470KΩ 20%	½	6R6032	BTS-470K	Isolation
R51	2.2Meg 20%	½	6R3937	BTS-2.2Meg	1st. Sync Clipper Grid
R52	680KΩ	½	6R6475	BTS-680K	1st. Sync Clipper Plate
R53	560KΩ	½	6R5697	BTS-560K	Voltage Divider
R54	22KΩ 20%	½	6R6028	BTS-22K	2nd. Sync Clipper Grid
R55	2200Ω	½	6R6069	BTS-2200	2nd. Sync Clipper Cathode
R56	6800Ω	½	6R6428	BTS-6800	2nd. Sync Clipper Plate
R57	2200Ω	½	6R6069	BTS-2200	2nd. Sync Clipper Plate

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R58	22KΩ 20%	½	6R6028	BTS-22K	Integrator Network
R59	10KΩ 20%	½	6R6054	BTS-10K	Integrator Network
R60	3300Ω	½	6R5581	BTS-3300	Vert. Peaking
R61	1800Ω	½	6R2089	BTS-1800	Vert. Peaking
R62	8700Ω	3	17K710950		Vert. Output Cathode - Wire Wound
R63	120Ω	½	6R5551	BTS-120	Damping
R64	82KΩ	½	6R5644	BTS-82K	Horiz. Phase Det. Grid
R65	82KΩ	½	6R5644	BTS-82K	Horiz. Phase Det. Grid
R66	100KΩ	½	6R6031	BTS-100K	Horiz. AFC Filter
R67	22KΩ	½	6R6397	BTS-22K	Horiz. Feedback
R68	4.7Meg 20%	½	6R2122	BTS-4.7Meg	Horiz. AFC Filter
R69	150KΩ	1	6R410053	BTA-150K	Horiz. Feedback
R70	150KΩ	1	6R410053	BTA-150K	Horiz. Feedback
R71	1200Ω	½	6R6393	BTS-1200	Horiz. MV Cathode
R72	5600Ω	½	6R6117	BTS-5600	Horiz. MV Plate
R73	120KΩ	½	6R5831	BTS-120K	Horiz. MV Plate - See Note 2
R74	22KΩ	½	6R6028	BTS-22K	Voltage Divider - See Note 3
R75	4700Ω	½	6R6080	BTS-4700	Horiz. Peaking
R76	330KΩ	½	6R2096	BTS-330K	Horiz. Output Grid
R77	4700Ω	½	6R6080	BTS-4700	Decoupling
R78	470Ω	½			Parasitic Suppressor - See Note 3
R79	8200Ω	2	6R5125	BTB-8200	Filter - See Note 3
R80	7.5Ω	5	1K711027		Surge Limiter - Wire Wound
R81	220Ω	½	6R3933	BTS-220	Decoupling - See Note 3
R82	1000Ω	½	6R6301	BTS-1000	2nd. Video IF Amp. Screen

Note 1. Some models use a 2200Ω resistor in this application.
Note 2. Some models use a 150KΩ resistor in this application.
Note 3. Not used in all models.

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⑥ .750A Tap ⑧ ⑨ 12.6VAC ⑩ .6A & 6.3VAC ⑪ 7.8A	6.3VAC 1.2A			25K-712297			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	53Ω	225Ω	25K702429				Vert. Osc. Trans.
T3	195Ω Tap ⑦ 20Ω	20Ω SEC. 2 0Ω	25K710730 ① 24K712193 24C711265 ②				Horiz. Output Trans.
T4	730Ω Tap ⑦ 1Ω		25B702445	A-8140 ③		TSO-6 ④	Vert. Output Trans.
T5A	45Ω		24K711584	DY-10	MDF-30		Horiz. Deflection Coils
B	3.8ΩΩ		24K711585 ③ 24K711581 ⑤				Vert. Deflection Coils

① Alternate Vert. Osc. Trans.
② Alternate Horiz. Output Trans.
③ Alternate Yoke Chassis TS-351
④ Drill one new mtg. hole
⑤ Drill new mtg. holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	2KΩ	3.5Ω	190Ω	.6Ω	25B710925-D 25K702429 ⑤	A-3876			⑤ Alternate Audio Output Trans.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	PM	3.5Ω	50C701328		10A31	① Alternate PM speakers
			50C701634 ①			② 6" EM speaker
			50C702057 ①			③ 8" EM speaker
			50C711978			④ 10" EM speaker
			50C489002			⑤ 10" PM speaker
			50C701615 ②			
			50C71061			
			50C703081			
			50C70802			
			50K700850			
			50C703098 ③			
			50C703339			
			50C712316			
			50C712384 ④			
			50C712232			
			50C703550 ⑤			
			50C703099			
	CONE DIA.	V. C. DIA.				
SP1B	10"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
L1	190A	82Ω	1.3 Hy.	25B701075	C-2327	C-2994	TR-3300	① Drill one new mtg. hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L2	Ant. Matching Coil	0Ω		24A790033			Low frequency
L3	Ant. Pri. Coils	0Ω		24K703079			High frequency
L4	Ant. Pri. Coils	0Ω		24K703078			Channels 2 thru 6
L5	Ant. Coils	0Ω		24K703003			Channel 13
L6	RF Coil	0Ω		24C703076			Channels 2 thru 6
L7	RF Coils	0Ω		24K703002			Channel 2 thru 13
L8	RF Choke	8.2Ω		24K792577		CL-1	10 Microhenries
L9	Osc. Coil	0Ω		24K703077			Channel 13
L10	Osc. Coil	0Ω		24C703001			Channel 2 thru 13
L11	1st. Video IF	.3Ω	.3Ω	24B702983	*TV-100		
L12	2nd. Video IF	.4Ω	.4Ω	1K712105			
L13	3rd. Video IF	.4Ω	.4Ω	1K712106			Includes trap, resistor, capacitor & RF Choke
L14	4th. Video IF	.4Ω	.4Ω	24K712104			
L15	RF Choke	2.8Ω		24B711413			
L16	Peaking Coil	12Ω		24K712101			Wound on 5.6K resistor
L17	4.5MC Trap	2.2Ω		1K792736	TV-151		
L18	Peaking Coil	9.8Ω		24K710140	TV-184		Wound on 8.8K resistor
L19	Peaking Coil	18Ω		24K712102			
L20	Sound IF	1.2Ω		1K790341	TV-151		Tertiary Winding .2Ω
L21	Ratio Det.	2.6Ω	.3Ω	24B702543	TV-110		
L22	Horiz. Osc.	50Ω		24K701558	TV-163		Wound on .15MF capacitor
L23	Horiz. Lin.	13.5Ω		24A710751			

* Drill new mtg. holes

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA SELETRON PART No.	REPLACEMENT DATA FEDERAL PART No.	NOTES
M1	.190A.	48B700555	NH-5	8Q4	1028	
		or 48B703089				
M2	.190A.	48B700555 or 48B703089	NH-5	8Q4	1028	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	RF Tuner	1X703205	TT-17 (Complete)
M4A	Crystal	48C711052	IN60
B	Crystal	48K712198	Alternate
C	Crystal	48K712199	Alternate
C D	Crystal	48K712200	Alternate
E	Crystal	48K710077	Alternate
M5	Switch	40A712292	Area Selector (Local -Suburban - Fringe)
M6A	Centering Magnet	48A711242	
B	Centering Magnet	48A711264	Alternate
C	Centering Magnet	48A710701	Alternate
D	Centering Magnet	48A711241	Alternate
M7A	Ion Trap	24K711843	
B	Ion Trap	24K711842	Alternate
C	Ion Trap	24K711841	Alternate
	Knob	38A485457	Horiz. & Vert. Hold
	Knob	36B712294	Area Selector
	Knob	36C700886	Contrast } Models 21F1 & 21F1B
	Knob	36K700887	Channel Selector } Models 21F1 & 21F1B
	Knob	36C700888	OFF/ON volume, Fine tuning } Models 21F1 & 21F1B
	Knob	36K701087	Contrast } Models 21K1, 21K1B, 21K2 & 21K2B
	Knob	36K701088	Channel Selector } Models 21K1, 21K1B, 21K2 & 21K2B
	Knob	36C700894	OFF/ON volume, Fine tuning } Models 21K1, 21K1B, 21K2 & 21K2B
	Knob	36K712030	Contrast } Models 21T1, 21T1B, 21T2 & 21T2B
	Knob	36K712029	Channel Selector } Models 21T1, 21T1B, 21T2 & 21T2B
	Knob	36C712031	OFF/ON volume, Fine tuning } Models 21T1, 21T1B, 21T2 & 21T2B
	Lever	36K712007	Tone (Used on all models listed. } Models 21T1, 21T1B, 21T2 & 21T2B

PHONO CARTRIDGE and NEEDLE

ITEM No.	PART No.	REPLACEMENT DATA ASTATIC CARTRIDGE	REPLACEMENT DATA ASTATIC NEEDLE	REPLACEMENT DATA SHURE CARTRIDGE	REPLACEMENT DATA SHURE NEEDLE	REPLACEMENT DATA ELECTRO-VOICE CARTRIDGE	REPLACEMENT DATA ELECTRO-VOICE NEEDLE	REMARKS
M8		GC-AG-J	G-AG	WC36B	A58U	43	U-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA WALCO PART No.	REPLACEMENT DATA JENSEN PART No.	REMARKS
M9		W-20AGA or W-21AGS	E-962 or E-902	

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V18	AM FM RF Amp.	6AU6	6AU6	7BK	
V19	AM FM Converter	6BA7	6BA7	8CT	
V20	AM FM IF Amp.	6BA6	6BA6	7BK	
V21	FM IF Amplifier	6AU6	6AU6	7BK	
V22	Ratio Detector	6AL5	6AL5	6BT	
V23	AVC-Det.-AF Amp.	6AV6	6AV6	7BT	
V24	Audio Output	6V6GT	6V6GT	7AC	
V25	Audio Output	6V6GT	6V6GT	7AC	
V26	Rectifier	7Z4	7Z4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C83A	40	300	23B690975	AFH4-53		UPT44435-C4		TVL-4739	● Filter
B	40	250							▲ Filter
C	40	250							■ Decoupling
D	40	25							Audio Output Cathode
C84	3	50	23K690543	PRS150/4		BBR-5-50		TVA-1303	Stabilizing Cap.
C85	5		21K70720	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	FM RF Coupling
C86	220		21K77375	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AM RF Coupling
C87	100		21B77286	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Amp. Plate Dec.
C88	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	5HK-S1	RF Amp. Screen Bypass
C89	100		21B77286	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Amp. Cathode Bypass
C90	100		21B77286	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C91	100		21R6554	1468-0001	D6-101	5W5T1	GP1K-101	1FM-35	RF Coupling
C92	24		21R28816		TCN-24		N750K-240		Osc. Grid Cap.
C93	85		21K691203						FM Osc. Feedback
C94	100		21B77286	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Osc. Anode Bypass
C95	1000		21K478410	BPD-001	DD-102	TM5D1	801-001	5HK-D1	Conv. Fil. Bypass
C96	.01	400	8R9809	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Conv. Decoupling
C97	.005	600	8R9873	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	1st. IF Amp. Dec.
C98	.01	400	8R9809	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	1st. IF Amp. Fil.
C99	.002	400	8R9824	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	2nd. FM IF Amp. Dec.
C100	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	5HK-S1	2nd. FM IF Amp. Cathode
C101	1000		21K478410	BPD-001	DD-102	TM5D1	801-001	5HK-D1	RF Bypass
C102A	250		21B484337	SI250	D6-251	5W5T25	GP2K-251	5GA-T25	Diode Load Cap.
B	250			SI250	D6-251	5W5T25	GP2K-251	5GA-T25	Diode Load Cap.
C103	1000		21K478410	BPD-001	DD-102	TM5D1	801-001	5HK-D1	De-Emphasis
C104	47		21K77373	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Diode RF Filter
C105	47		21K77373	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Diode RF Filter
C106	.05	200	8R9821	P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C107	.05	200	8R9821	P288-05	DF-503	PJ2S5		2TM-S5	Audio Coupling
C108	5000		8R9813 †	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C109	.01	400	8R9809	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C110	.005	600	8R9813	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C111	220		21K77375	SI220	D6-221	5R5T25	GP2K-221	5GA-T22	AF Amp. Plate Bypass ¶
C112	.05	400	8K470606	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C113	.05	400	8K470606	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C114	.002	400	8R9824	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Output Plate
C115	.002	400	8R9824	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Output Plate

† Items C108 and R104 are combined in one unit.
¶ Some models use 100MMF in this application (Part #21B77286)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R83A	2Meg	½	18A600974	Q13-139X	AT-115	AB-80	Volume-Tapped ② 600K
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R82A per instructions
C	Switch		Not Req.	76-1	K-155	KB-1	Attach to R82A per instructions
R84A	1Meg	½	18K77399	Q14-137	AG-61-S	AB-68	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R83A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R85	120Ω	½	6R5551	BTS-120	RF Amp. Cathode
R86	470Ω	½	6R3949	BTS-470	RF Amp. Plate Decoupling
R87	3.3Ω	1	6R490131		Parasitic Suppressor
R88	47KΩ	½	6R6048	BTS-47K	RF Amp. Screen
R89	22KΩ	½	6R6028	BTS-22K	Converter Grid
R90	1Meg	½	6R6004	BTS-1Meg	RF Amp. Grid
R91	8.2Meg	½	6R5585	BTS-8.2Meg	AVC Network
R92	47KΩ	½	6R6048		Osc. Grid
R93	1500Ω	½	6R6038	BTS-1500	Converter Cathode
R94	8200Ω	2	6R5725	BTB-8200	Converter Decoupling
R95	68Ω	½	6R2039		IF Amp. Cathode
R96	8200Ω	2	6R5725	BTB-8200	IF Amp. Decoupling
R97	3.3Meg	½	6R6497	BTS-3.3Meg	AVC Network
R98	150Ω	½	6R3992	BTS-150	2nd. FM IF Amp. Cathode
R99	15KΩ	1	6R6431	BTA-15K	2nd. FM IF Amp. Decoupling
R100	47KΩ	½	6R6056	BTS-47K	De-emphasis
R101	33KΩ	½	6R6410	BTS-33K	Ratio Det. Diode Load
R102	47KΩ	½	6R6056	BTS-47K	Diode Filter
R103	1Meg	½	6R6046	BTS-1Meg	Diode Load
R104	10Meg	½	6R2109 †	BTS-10Meg	AF Amp. Grid
R105	33KΩ	½	6R6012	BTS-33K	Tone Compensation
R106	68KΩ	½	6R6001	BTS-68K	AF Amp. Plate
R107	220Ω	1	6R6389	BTA-220	Output Cathode
R108	470KΩ	½	6R6032	BTS-470K	Output Grid
R109	470KΩ	½	6R6032	BTS-470K	Output Grid
R110	390Ω	1	6R5598	BTA-390	Output Plate
R111A	180	5	17A690973		Filter-Wire Wound
B	180	5			Filter-Wire Wound

† Items R104 C108 are combined in one unit.

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T7	117VAC @ .630A	500VCT @ .093A	7VAC @ .9A Tap @ 6.3VAC @ 2.9 A.		25B691035			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	1.6KΩ	3.5Ω	140Ω	.5Ω	25K601158			RO-304	
	PRI. 2		PRI. 2						
	1.6KΩ		160Ω						

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	
L24	FM Ant. Coil	0Ω		24C690584		
L25	FM RF Coil	0Ω		24C690584		
L26	RF Choke	.4Ω		24A484025		
L27	FM Osc. Coil	0Ω		24K690996		
L28	AM Loop Ant.	3Ω		24C690896		
L29	AM RF Coil	3Ω	10Ω	24B690899		Tap @ .5Ω
L30	AM Osc. Coil	14.4Ω		24B690976		Tap @ 7.2 and .4Ω
L31	RF Choke	.6Ω		24K780128		
L32	1st. FM IF	2Ω	.7Ω	24B690540		Less shield
L33	1st. AM IF	14.5Ω	14.5Ω	24B482863		Less shield
L34	2nd. FM IF	4.6Ω	.6Ω	24B690541		Less shield
L35	2nd. AM IF	14.5Ω	14.5Ω	24B482865		Less shield
L36	Ratio Det.	2Ω	.1Ω	24B690542		Includes shield

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MOTOROLA PART No.		
M10	Bayonet	6-8	.15	Brown	65X11854		Type #47
M11	Bayonet	6-8	.15	Brown	65X11854		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M12	Switch	40B690977	AM-FM-Phono
M13	Switch	40A691922	Phono Motor
M14	Tuning Cap	19B690978	(21-454 MMF) - (26 -186MMF)
	Knobs	36K611057	OFF/ON volume, Tone AM-FM-Phono & Tuning

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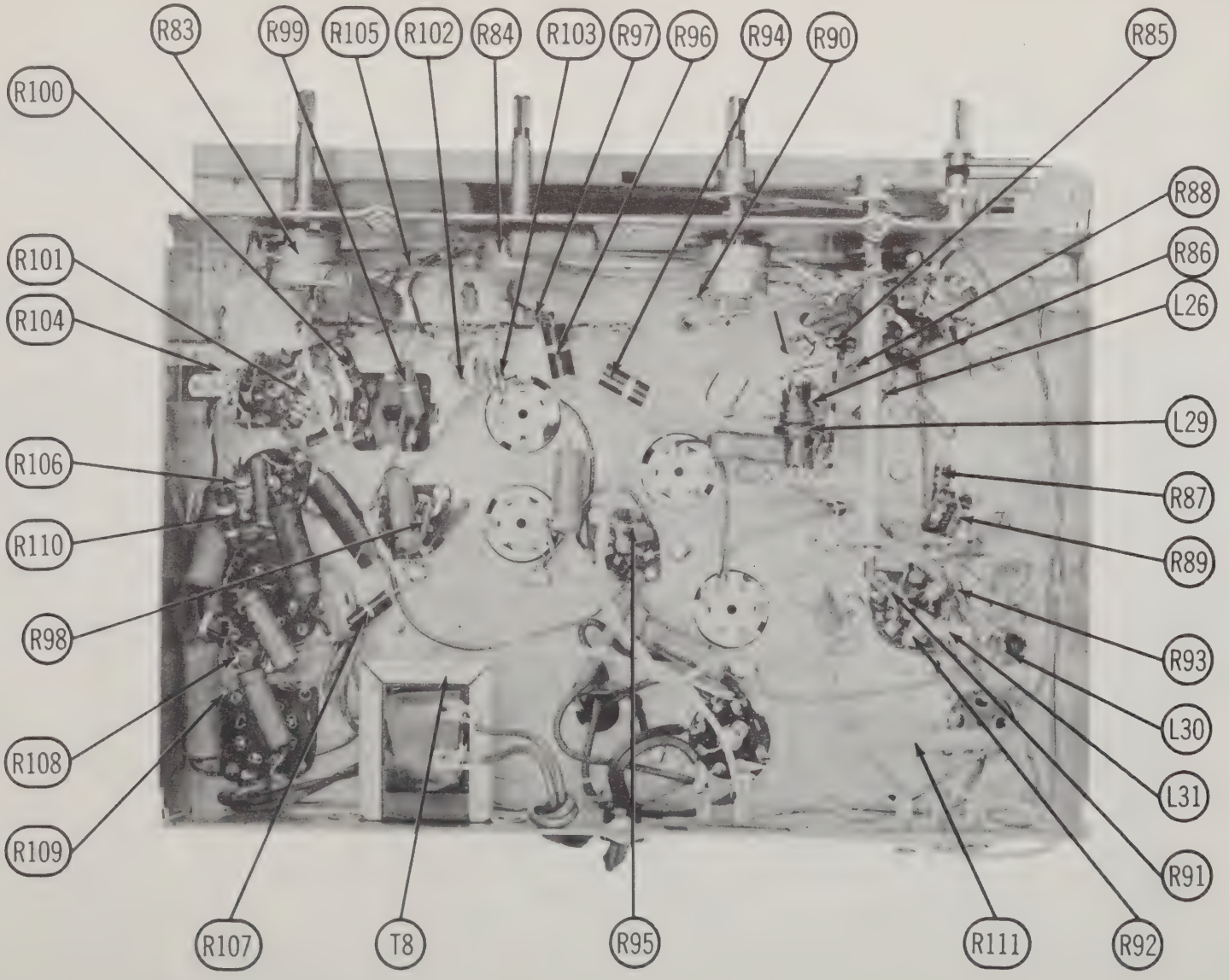

RADIO CHASSIS-BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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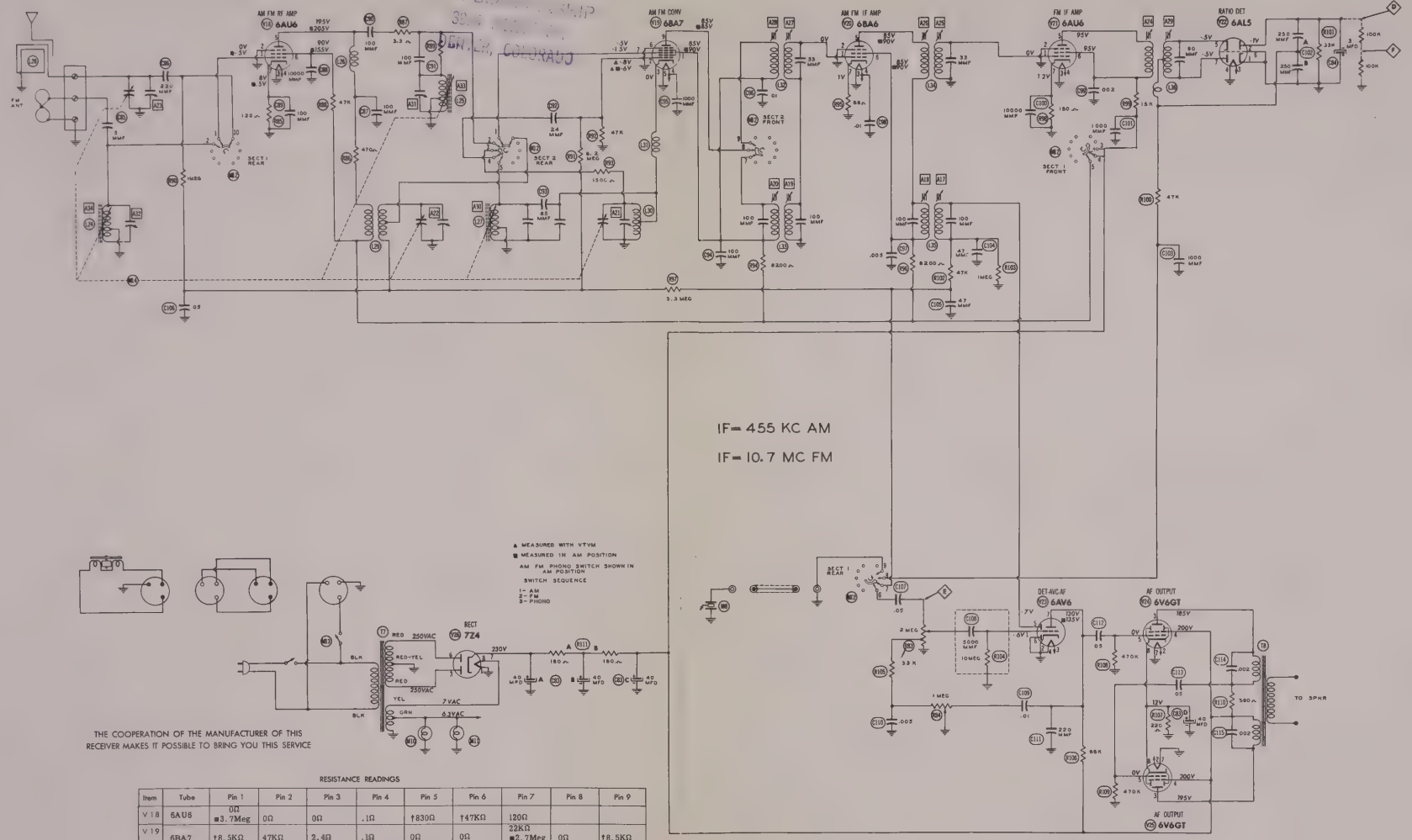
AM FM RF AMP V18 6AU6
AM FM CONV V19 6BA7
AM FM IF AMP V20 6BA6
FM IF AMP V21 6AU6
RATIO DET V22 6AL5
SECT 1 REAR
SECT 2 REAR
SECT 2 FRONT
SECT 1 FRONT
IF = 455 KC AM
IF = 10.7 MC FM
DET-AVC-AF V23 6AV6
AF OUTPUT V24 6V6GT
AF OUTPUT V25 6V6GT
RECT V26 7Z4
TO SPKR

▲ MEASURED WITH VTVM
■ MEASURED IN AM POSITION
AM FM PHONO SWITCH SHOWN IN AM POSITION
SWITCH SEQUENCE
1- AM
2- FM
3- PHONO

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 18	6AU6	0Ω ■3.7Meg	0Ω	0Ω	.1Ω	†830Ω	†47KΩ	120Ω		
V 19	6BA7	†8.5KΩ	47KΩ	2.4Ω	.1Ω	0Ω	0Ω	22KΩ ■2.7Meg	0Ω	†8.5KΩ
V 20	6BA6	15Ω	0Ω	0Ω	.1Ω	†8.5KΩ	†8.5KΩ	68Ω		
V 21	6AU6	.6Ω	0Ω	0Ω	.1Ω	†15KΩ	†15KΩ	150Ω		
V 22	6AL5	0Ω	33KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 23	6AV6	10Meg	0Ω	.1Ω	0Ω	1Meg	0Ω	†68KΩ		
V 24	6V6GT	250Ω	.1Ω	†890Ω	†360Ω	470KΩ	†750Ω	0Ω	220Ω	
V 25	6V6GT	INF	.1Ω	†420Ω	†360Ω	470KΩ	INF	0Ω	220Ω	
V 26	7Z4	0Ω	INF	82Ω	INF	INF	80Ω	50KΩ	.1Ω	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED
■ MEASURED IN "AM" POSITION
† MEASURED FROM PIN 7 OF V26

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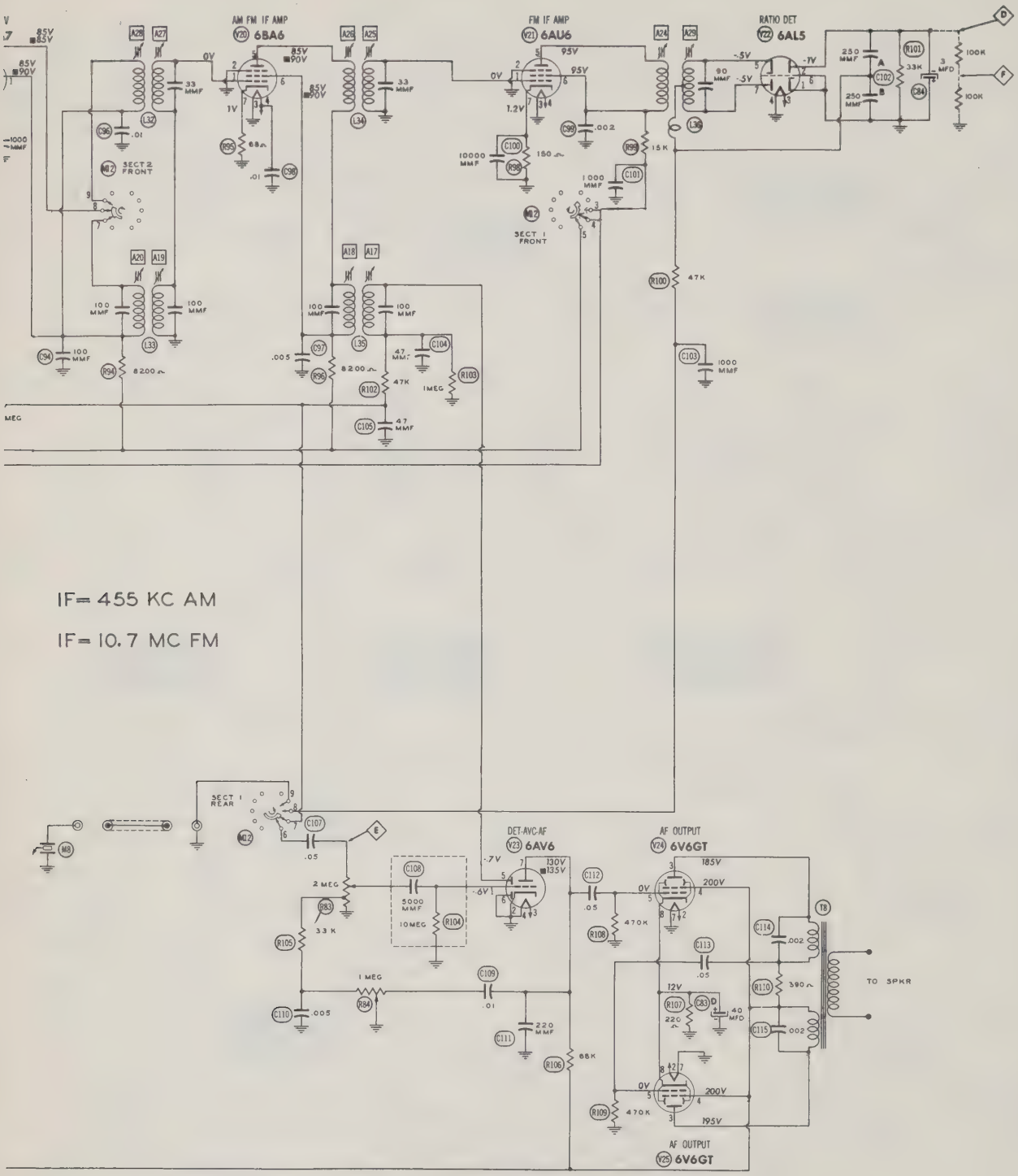
MOTOROLA MODELS 21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B, (Ch. TS-351, A)

RADIO SCHEMATIC



MOTOROLA MODELS 21F1, B (Ch. TS-351, A & Radio Ch. HS-316), 21K1, B, 21K2, B, 21T1, B, 21T2, B, (Ch. TS-351, A)

SCHEMATIC

PHOTOFACT* Folder

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

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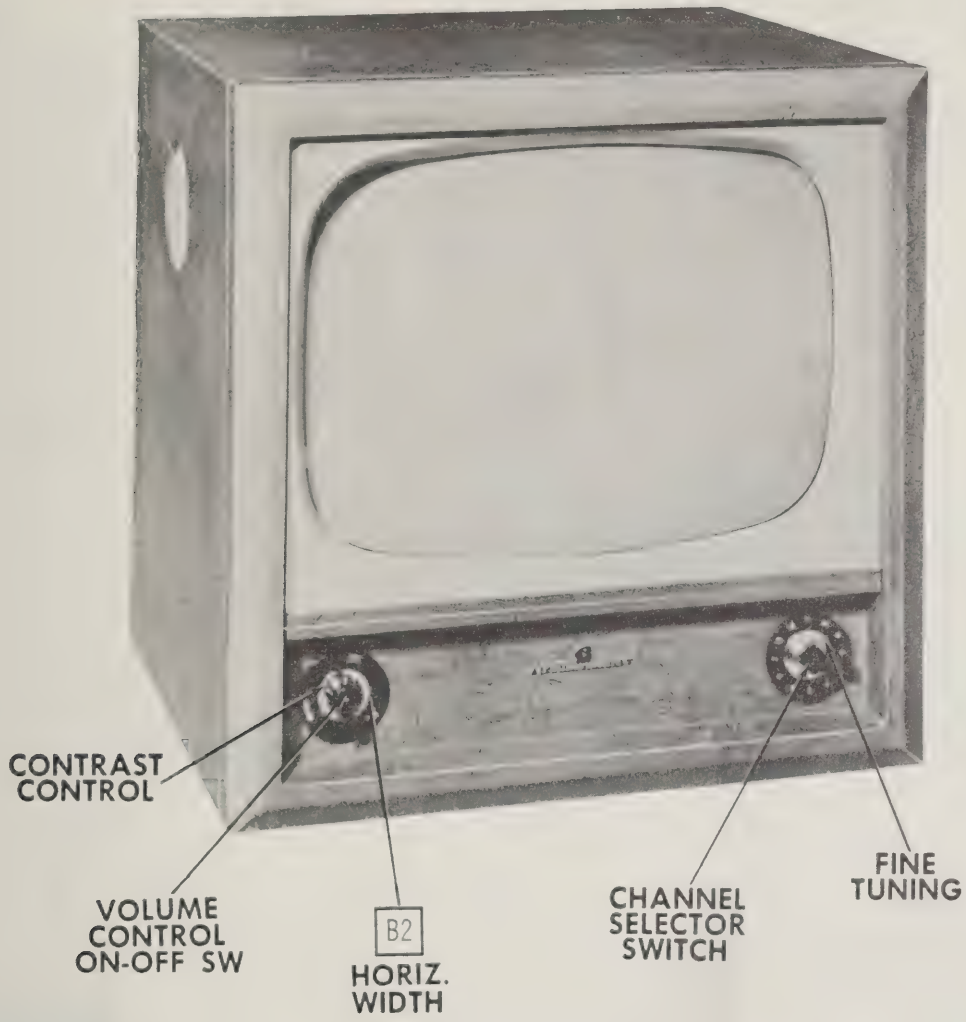
DATE 7-52 SET 173 FOLDER 10

PHOTOFACT* Folder

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820



PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

TRADE NAME	Philharmonic Models 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820
MANUFACTURER	Philharmonic Radio and Television Corp., 235 Jersey Ave., New Brunswick, New Jersey
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.94 Amp. @ 117 volts AC
TUNING RANGE	Channels 2 thru 13

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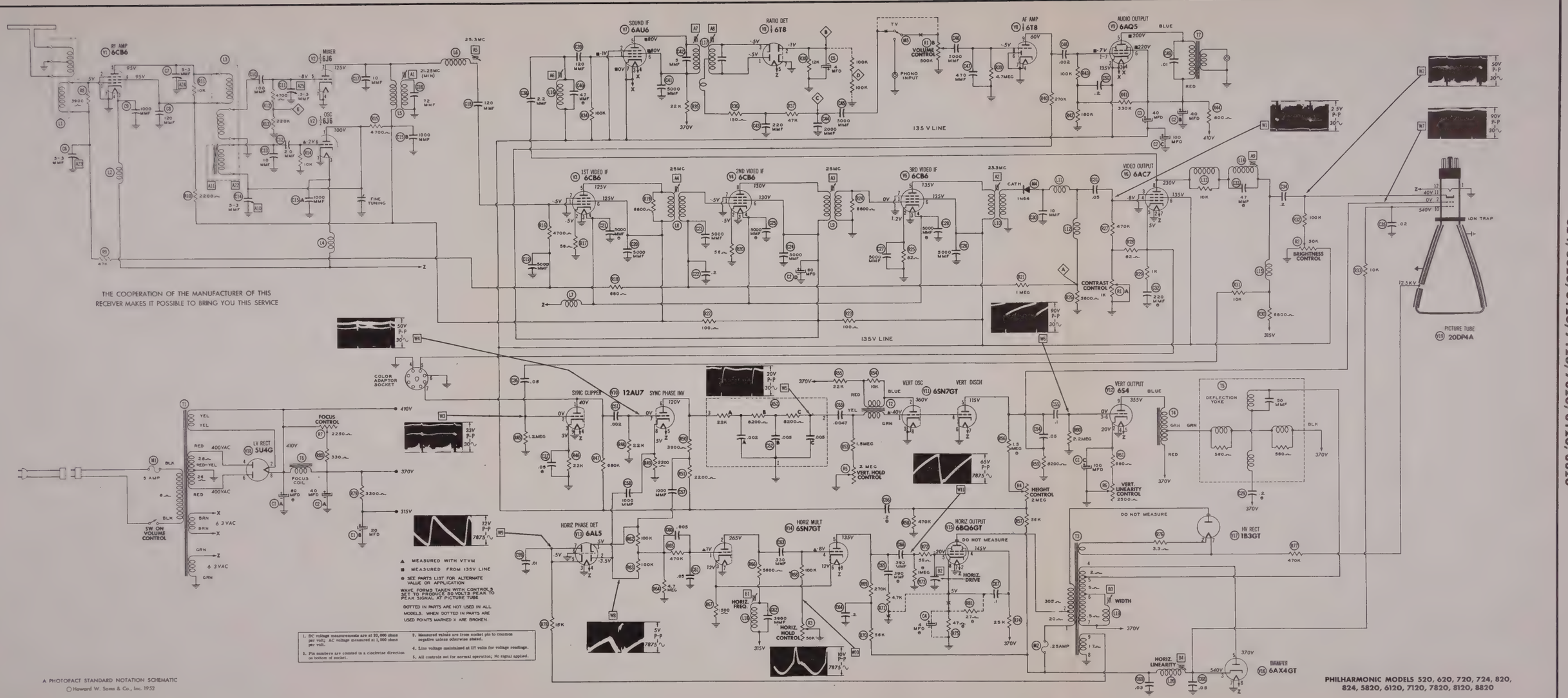
RF AMP Y1 6CB6
MIXER Y2 6J6
OSC Y2 6J6
SOUND IF Y7 6AU6
RATIO DET Y8 6T8
AF AMP Y8 6T8
AUDIO OUTPUT Y9 6AQ5
1ST VIDEO IF Y5 6CB6
2ND VIDEO IF Y6 6CB6
3RD VIDEO IF Y6 6CB6
VIDEO OUTPUT Y5 6AC7
PICTURE TUBE Y10 20DP4A
SYNC CLIPPER Y10 12AU7
SYNC PHASE INV
VERT OSC Y11 6SN7GT
VERT DISCH
VERT OUTPUT Y13 6S4
HORIZ PHASE DET Y13 6AL5
HORIZ MULT Y14 6SN7GT
HORIZ OUTPUT Y15 6BQ6GT
HV RECT Y17 1B3GT
DAMPER Y16 6AX4GT
LV RECT Y18 5U4G
VOLUME CONTROL
PHONO INPUT
CONTRAST CONTROL
BRIGHTNESS CONTROL
FOCUS CONTROL
FOCUS COIL
VERT. HOLD CONTROL
VERT. LINEARITY CONTROL
HEIGHT CONTROL
HORIZ. DRIVE
HORIZ. FREQ.
HORIZ. HOLD CONTROL
WIDTH
HORIZ. LINEARITY
FINE TUNING
COLOR ADAPTOR SOCKET
DEFLECTION YOKE
135 V LINE
DO NOT MEASURE
SW ON VOLUME CONTROL
5 AMP
.25AMP
1 Tan
1N64
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
▲ MEASURED WITH VTVM
■ MEASURED FROM 135V LINE
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
WAVE FORMS TAKEN WITH CONTROL B SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

CHASSIS TOP VIEW

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L. F. BLATNERSHIP
3929 MEADE ST.
DENVER COLORADO

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative side of a 3 volt battery to the ungrounded side of C23. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.25MC	Any	DC probe to Point (A). Low side to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	23.3MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	25MC	"	"	A3, A4	"
4.	"		25.3MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Leave the 3 volt battery connected as before.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube.	24MC (10MC swp.)	21.25MC 25.75MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1 with video marker at 50%. If necessary readjust A2 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point (B) to chassis. The junction of these two resistors is alignment Point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to Point (A). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to Point (A). Low side to chassis.	4.5MC (450KC swp.)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A6, A7	Disconnect stabilizor capacitor C5. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A8	Reconnect capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to Point (A). Low side to chassis.	4.5MC (unmod.)	Any	DC probe thru crystal diode detector (fig.4) to pin 11 of picture tube. Common to chassis.	A9	Adjust for MINIMUM deflection.

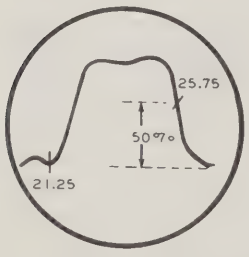


FIG.1

FIG. 2

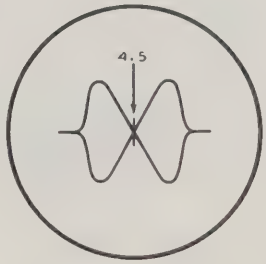


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Remove the dummy converter tube and replace the original 6J6 in its socket.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point (A) Low side to chassis.	A11	Adjust to place sound marker in 21.25MC trap notch as in fig. 5. Video marker should be at 50% response.
			207MC (10MC swp.)	205.25MC 209.75MC	12		A12	
			201MC (10MC swp.)	199.25MC 203.75MC	11		A13	
			195MC (10MC swp.)	193.25MC 197.75MC	10		A14	
			189MC (10MC swp.)	187.25MC 191.75MC	9		A15	
			183MC (10MC swp.)	181.25MC 185.75MC	8		A16	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A17	
			85MC (10MC swp.)	83.25MC 87.75MC	6		A18	
			79MC (10MC swp.)	77.25MC 71.75MC	5		A19	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A20	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A21	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A22	

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC swp.)	205.25MC 209.75MC	12	Vert. amp. thru 47KΩ to Point (E) Low side to chassis.	A23, A24 A25	Adjust for response curve of maximum amplitude and symmetry as per fig. 6 with markers above 90% response.
11.	"	"	213MC (10MC swp.)	211.25MC 215.75MC	13	"		Check all channels for proper response. If markers fall below 70% on any channel make slight compromise adjustments of A23, A24 and A25 on that channel then recheck all other channels to see that they have not been seriously affacted.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			85MC (10MC swp.)	83.25MC 87.75MC	6			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

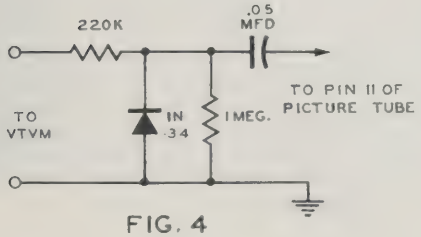


FIG. 4

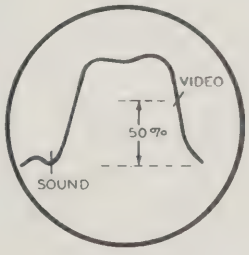


FIG. 5

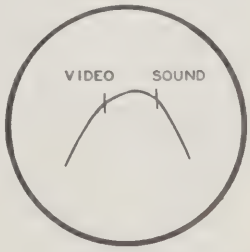


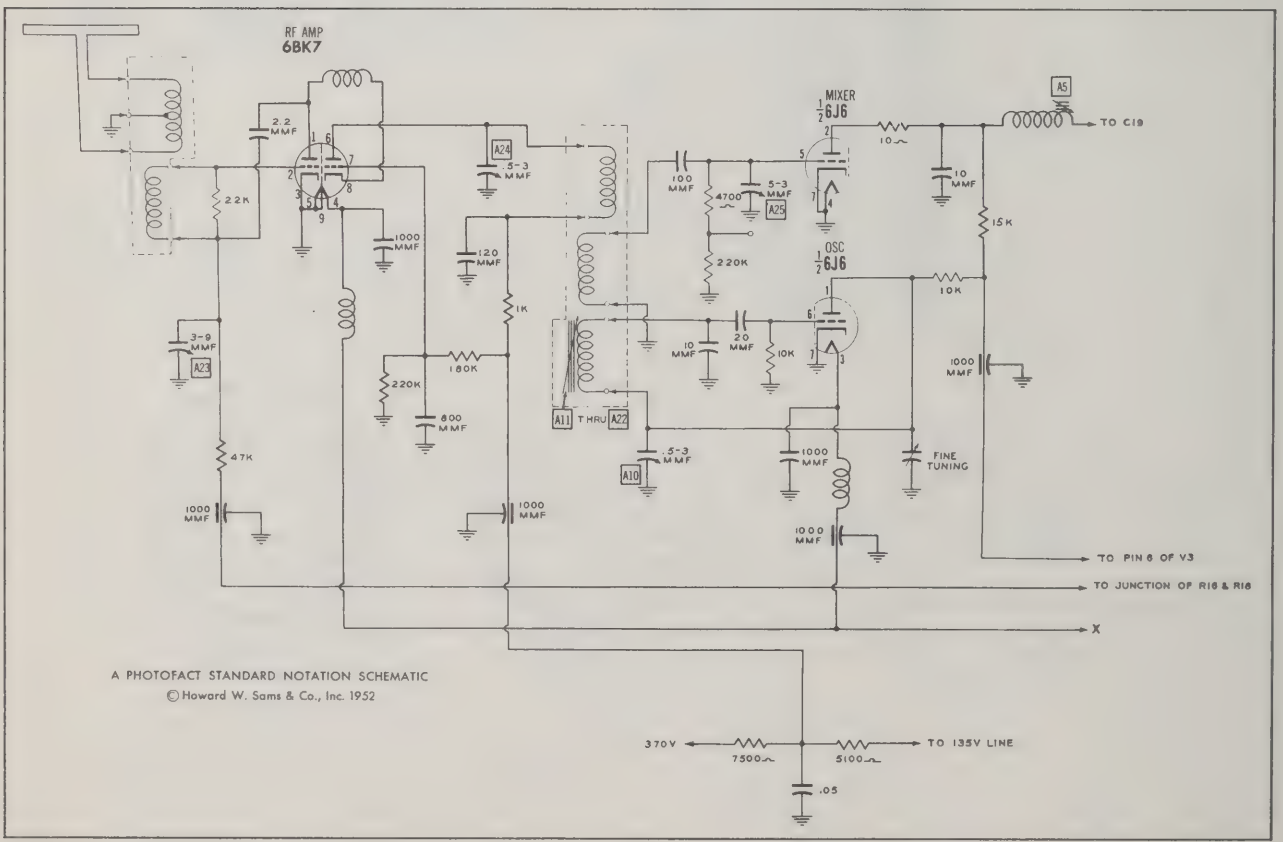
FIG. 6

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

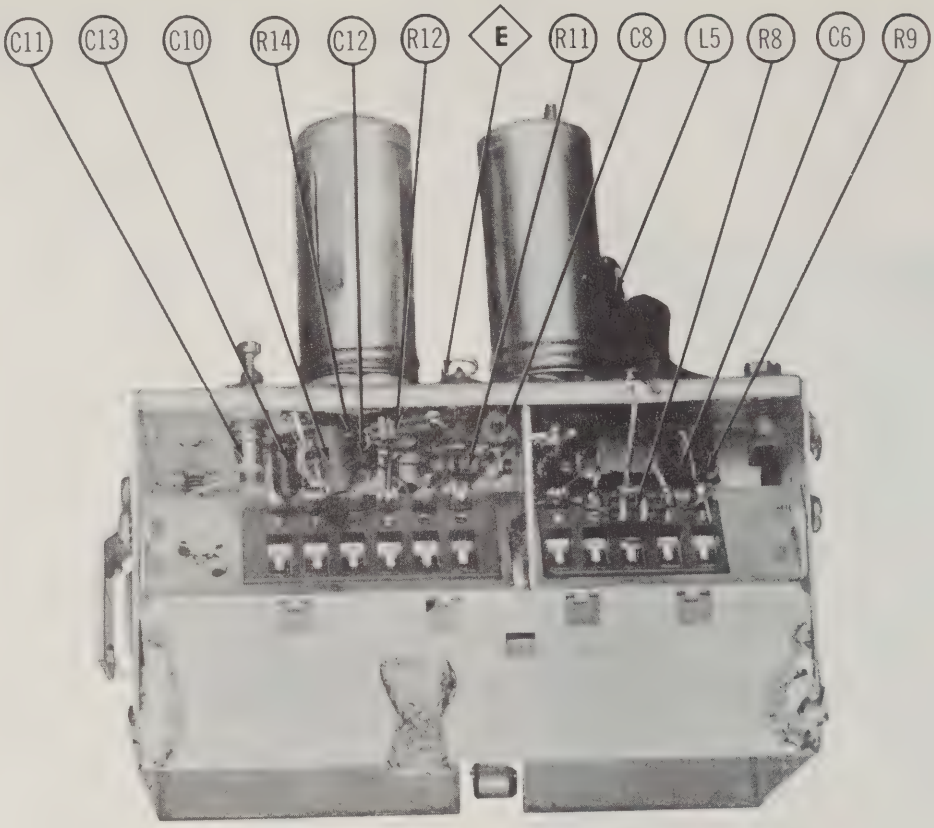
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1Meg	0Ω	.1Ω	0Ω	■2.4KΩ	■2.4KΩ	0Ω		
V 2	6J6	■4.9KΩ	■200Ω	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	56Ω	0Ω	.1Ω	■200Ω	■200Ω	0Ω		
V 4	6CB6	1Meg	56Ω	0Ω	.1Ω	■100Ω	■100Ω	0Ω		
V 5	6CB6	.2Ω	82Ω	0Ω	.1Ω	■0Ω	■0Ω	0Ω		
V 6	6AC7	0Ω	0Ω	0Ω	470KΩ	390Ω	■0Ω	.1Ω	†10KΩ	
V 7	6AU6	■100KΩ	■0Ω	■0Ω	■.1Ω	†22KΩ	†22KΩ	■0Ω		
V 8	6T8	INF	12KΩ	INF	0Ω	.1Ω	0Ω	0Ω	4.7MEG	■270KΩ
V 9	6AQ5	240KΩ	40KΩ	■0Ω	■.1Ω	†1.1KΩ	†800Ω	240KΩ		
V 10	12AU7	■680KΩ	1.2Meg	22KΩ	.1Ω	.1Ω	■6.1KΩ	22KΩ	2.2KΩ	0Ω
V 11	6SN7GT	2.8Meg	†22KΩ	0Ω	2.8Meg	#2.5Meg	0Ω	.1Ω	0Ω	
V 12	6S4	INF	1.6KΩ	2.2Meg	0Ω	.1Ω	2.2Meg	INF	INF	†1.4KΩ
V 13	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	15KΩ	0Ω	15KΩ		
V 14	6SN7GT	5.1Meg	†9.1KΩ	1.5KΩ	140KΩ	#325KΩ	1.5KΩ	0Ω	.1Ω	
V 15	6BQ6GT	INF	.1Ω	INF	†25KΩ	1Meg	INF	0Ω	47Ω	TOP CAP #42Ω
V 16	6AX4GT	†230Ω	INF	480KΩ	INF	†232Ω	INF	0Ω	.1Ω	
V 17	1B3GT	PINS	1 - 8	HAVE	INF	RESISTANCE				TOP CAP #347Ω
V 18	5U4G	INF	45KΩ	INF	28Ω	INF	26Ω	INF	45KΩ	
V 19	20DP4A	0Ω	8.2KΩ	PIN 10 #10KΩ	PIN 11 110KΩ	PIN 12 .1Ω				

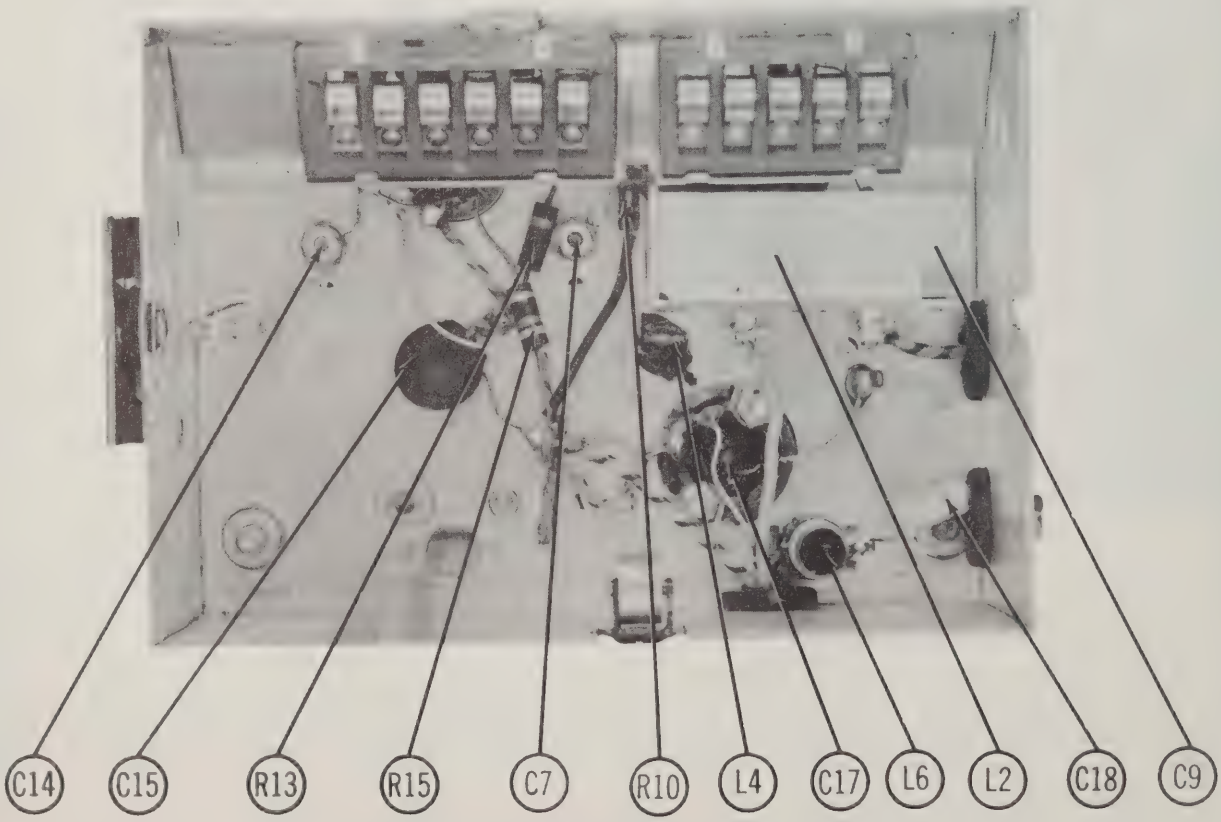
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V18
■ MEASURED FROM 135 VDC LINE



ALTERNATE TUNER SCHEMATIC

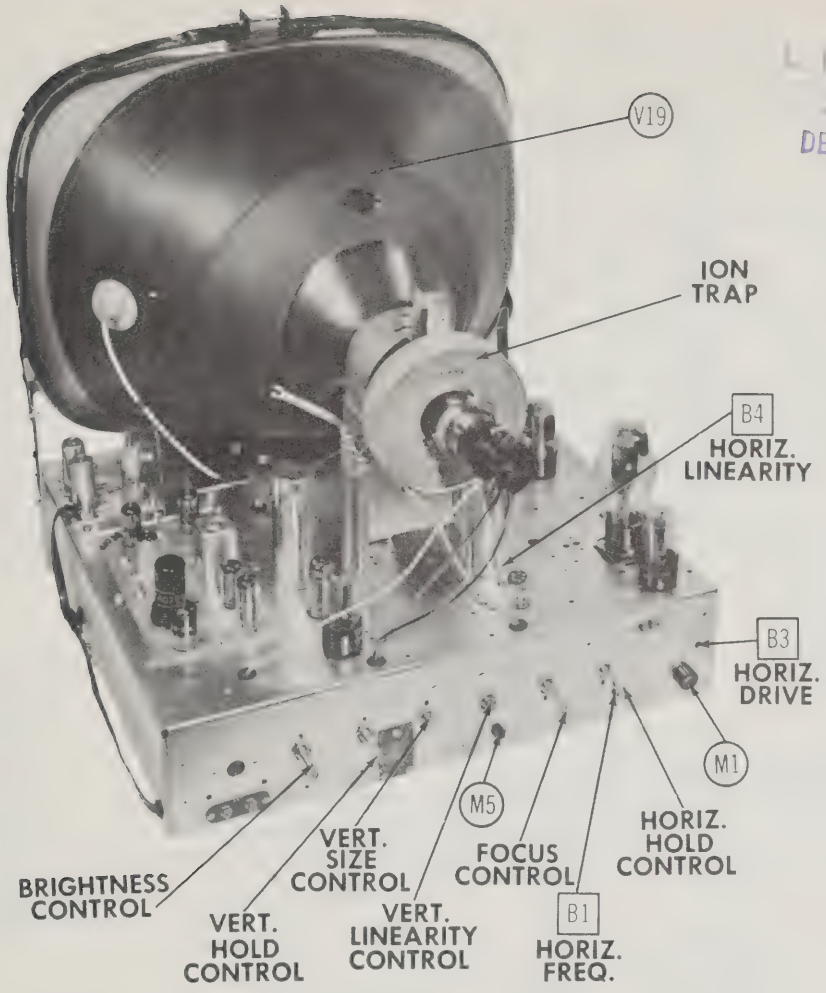


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

DENVER, COLORADO



CHASSIS-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counterclockwise to the point just before the picture starts to compress in the center.

Adjust the width slug (B3) for a picture slightly wider than enough to fill the picture mask.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CH	
B	RF Amplifier	6AQ5	6AQ5	7BD	
C	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J8	6J8	7BF	
V3	1st. Video IF Amp	6CB6	6CB6	7CH	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CH	
V5	3rd. Video IF Amp	6CB6	6CB6	7CH	
V6	Video Output	6AC7	6AC7	9N	
V7	Sound IF Amp.	6AU8	6AU8	7BK	
V8	Ratio Detector - AF Amp.	6T8	6T8	9E	
V9	Audio Output	6AQ5	6AQ5	7BE	
V10	Sync Clipper - Sync Phase Inv.	12AU7	12AU7	9A	
V11	Vert. Oscillator - Vert. Discharge	6SN7GT	6SN7GT	8BD	
V12	Vert. Output	6S4	6S4	9AC	
V13	Horiz. Phase Det.	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V16	Damper	6AX4GT	6AX4GT	6CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: SYLVANIA PART No	RMA BASE TYPE	NOTES
V19A	20DP4A	20DP4A	12D	① Circuit changes necessary
		20DP4 ①	12D	② 3/8" shorter
		20CP4 ① ③	12D	
		20CP4A ① ②	12D	
		20HP4A ①	12C	
		20HP4A ①	12C	
V19B	34AP4, A	34AP4, A	12D	Used in Models 724 and 824

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	450		APH4-87		UPT62245		TVL-2777	▲ Filter †
B	20	450				BRH501		TVA-1310	■ Decoupling
C	100	50							▲ Vert. Output Cathode
C2A	40	450		APH1-459				TVL-3764	▲ Decoupling
B	40	450		PRS200/30-30				TVA-1613	■ Audio Output Dec.
C	100	200							▲ Decoupling
D	60	200							Decoupling
C3	40	350		PRS450/40		BR4035		TVA-1611	Decoupling
C4	4	50		PRS150/4		BR550		TVA-1303	Horiz. Output Cathode *
C5	4	50		PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C6	.5-3				829-3				Variable Trimmer
C7	.5-3				829-3				Variable Trimmer
C8	150			SU30	D6-121	TMS712	GP2K-121	5GA-T12	RF Amp. Decoupling
C9	1000			SU000	D6-102	TMSD1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C10	100			SU00	D6-101	TMST1	GP1K-101	5GA-T1	RF Coupling
C11	.5-3				829-3				Variable Trimmer
C12	30			SU30NP0	TCZ-30		NP0K-200		Osc. Grid Cap.
C13	10			SU10NT50	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C14	.5-3				829-3				Variable Trimmer
C15A	1000			BPD-2X001	DD-2-102	TMSDD1	SI2-001	5HK-2D1	Conv. Fil. Bypass
B	1000								RF Bypass
C16	T2	500		1469-000075					Fixed Trimmer
C17	10			SU10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C18	120	500		1469-00015		SR5T15			IF Coupling
C19	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	AGC Filter
C20	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	1st. Video IF Dec.
C21	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	1st. Video IF Fil. *
C22	.2	400		684-2		PTK4P22		4TM-P22	AGC Filter
C23	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	AGC Filter
C24	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	2nd. Video IF Dec.
C25	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	2nd. Video IF Fil. *
C26	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	3rd. Video IF Dec.
C27	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	3rd. Video IF Cathode
C28	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	3rd. Video IF Fil. *
C29	.2	600		684-2					Horiz. Sweep Coupling
C30	10	500		1469-00001	TCZ-10	5RS01	NP0K-100	MS-41	Video Det. Filter
C31	.05	400		P488-05	DF-503	PTK4S5		4TM-S5	Video Coupling
C32	220			SU220	D6-221	5R5T25	GP2K-221	5GA-T22	Contrast Cont. Shunt *
C33	47			SU47	D6-470	5R5Q5	GP1K-470	5GA-Q47	Fixed Trimmer †
C34	.2	400		684-2		PTK4P22		4TM-P22	Video Coupling
C35	.02	1000		P1088-02		PTK1S2		MB-S2	Accelerating Anode Bypass
C36	.05	400		P488-05	DF-503	PTK4S5		4TM-S5	Video Coupling
C37	.05	400		P488-05	DF-503	PTK4S5		4TM-S5	DC Rest. Cathode ¶
C38	2.2				TCZ-2.2		NP0K-2R2		Sound IF Coupling
C39	120			SU20	D6-121	TMST12	GP2K-121	5GA-T12	Sound IF Coupling
C40	47			SU47	D6-470	5R5Q5	GP1K-470	5GA-Q47	Sound IF Coupling ††
C41	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	Sound IF Decoupling
C42	5	500		1469-000005		5R5Y5		MS-55	Fixed Trimmer
C43	220	500		1469-00025	D6-221	5W5T25	GP2K-221	1FM-325	Diode Load Cap.
C44	2000			SU000	D6-202	TMSD2	GP2-333-202	5HK-D2	De-emphasis
C45	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	Audio Coupling
C46	5000			BPD-005	DD-502	TMSD5	SI1-005	5HK-D5	Audio Coupling
C47	470	500		1469-0005	D6-471	5W5T5	GP2K-471	1FM-35	RF Bypass
C48	.002	600		P688-002	D6-202	PTK6D2	GP2-333-202	5TM-D2	Audio Coupling
C49	.01	600		P688-01	D6-103	PTK6S1	GP2-333-103	6TM-S1	Audio Output Plate

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C50	.2	400		684-2		PTK4P22		4TM-P22	RF Bypass
C51	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Sync Coupling
C52A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005			P688-005	*PC-100	PTE6D5	GP2-333-502	*101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C53	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Vert. Osc. Grid Cap.
C54	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C55	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C56	.2	600		684-2					Vert. Osc. Dec. *
C57	1000			SI1000	D6-102	TMS6D1	GP2L-102	5HK-D1	Horiz. Sync Coupling
C58	1000			SI1000	D6-102	TMS6D1	GP2L-102	5HK-D1	Horiz. Sync Coupling
C59	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Voltage Divider
C60	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. AFC Filter
C61	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. AFC Filter
C62	3900	500		1464-004		IDR5D4			Fixed Trimmer
C63	330	500		1469-00035					Horiz. MV Feedback
C64	.2	600		684-2					RF Bypass
C65	390	500		1469-0004		5R5T4		MS-34	Horiz. Discharge ††
C66	390	500		1469-0004		5R5T4		MS-34	Horiz. Sweep Coupling
C67	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C68	.05	1000		P1088-05				MB-S5	Damper Filter
C69	.03	1000		P1088-03		PTE18S3		MB-S3	Damper Filter

* Not used in all models
† Some models use two 40MFD in this application
† Some models use 120MMF in this application
¶ Some models use 4MFD ② 50V in this application
†† Some models use 75MMF in this application
†† Some models use 470MMF in this application
• Items C52A, C52B, C52C, R52A, R52B, R52C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	1000Ω	½	P34-190A	QJ-326 *			Contrast Control -Panel-See Note
B	500KΩ	½					Volume Control & SW.-Rear
R2A	50KΩ	½	P25-18	QU-123	AG-44-S	AB-31	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per Instructions
R3A	50KΩ	½	P25-18	QU-123	AG-44-S	AB-31	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R3A per Instructions
R4A	2Meg	½	P26-15	QU-139	AG-83-S	AB-75	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per Instructions
R5A	2Meg	½	P25-20	QU-139	AG-83-S	AB-75	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R5A per Instructions
R6A	2500Ω	½	P25-13	QU-112	AG-15-S	AB-7	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per Instructions
R7	2250Ω	4	P25-19		RTV-319		Focus - Wire Wound

Note. Connect 1800 ohm Resistor between center terminal and maximum clockwise terminal, (control viewed from shaft end, terminals down).
* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS AND SHAFTS, B17-110 & P1-224 (Panel), B13-133 & R2-306 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R8	3900Ω	½		BTS-3900	Antenna Coil Shunt
R9	47KΩ 20%	½			RF Amp. Grid
R10	2200Ω 20%	½		BTS-2200	RF Amp. Decoupling
R11	10KΩ	½			RF Coil Shunt
R12	4700Ω	½		BTS-4700	Mixer Grid
R13	220KΩ 20%	½			Mixer Grid
R14	10KΩ	½			Oscillator Grid
R15	4700Ω	½		BTS-4700	Oscillator Plate
R16	4700Ω	½		BTS-4700	1st. Video IF Grid
R17	56Ω	½			1st Video IF Cathode
R18	680Ω	½		BTS-680	AGC Network
R19	6800Ω	½			2nd. Video IF Coil Shunt
R20	56Ω	½			2nd. Video IF Cathode
R21	1Meg 20%	½		BTS-1Meg	AGC Network
R22	100Ω	½		BTS-100	Decoupling
R23	100Ω	½		BTS-100	Decoupling
R24	6800Ω	½			3rd. Video IF Coil Shunt
R25	82Ω	½		BTS-82	3rd. Video IF Cathode
R26	5600Ω	½		BTS-5600	Video Detector Diode Load
R27	470KΩ	½		BTS-470K	Video Output Grid
R28	82Ω	½		BTS-82	Video Output Cathode
R29	1000Ω	½		BTS-1000	Contrast Network
R30	6800Ω	2		BTB-6800	Video Output Plate
R31	10KΩ	½		BTS-10K	Isolation
R32	100KΩ	½		BTS-100K	Picture Tube Cathode
R33	10KΩ	½		BTS-10K	Acc. Anode Load
R34	100KΩ	½		BTS-100K	Sound IF Grid
R35	22KΩ	2		BTB-22K	Sound IF Decoupling
R36	150Ω	½		BTS-150	Balancing
R37	47KΩ 20%	½		BTS-47K	De-emphasis
R38	12KΩ	½		BTS-12K	Ratio Det. Diode Load
R39	4.7Meg	½		BTS-4.7Meg	AF Amp. Grid
R40	270KΩ	½		BTS-270K	AF Amp. Plate
R41	330KΩ 5%	½		BTS-330K 5%	Voltage Divider
R42	180KΩ 5%	½		BTS-180K 5%	Voltage Divider
R43	100KΩ	½		BTS-100K	AF Output Grid
R44	800Ω	5		1 3/4A-800	AF Output Decoupling - Wire Wound
R45	1.2Meg	½		BTS-1.2Meg	Sync Clipper Grid
R46	22KΩ	½		BTS-22K	Sync Clipper Cathode
R47	680KΩ	½		BTS-680 K	Sync Clipper Plate
R48	22KΩ	½		BTS-22K	Sync. Ph. Inv. Grid
R49	2200Ω	½		BTS-2200	Sync Ph. Inv. Cathode
R50	3900Ω	½		BTS-3900	Sync Ph. Inv. Plate
R51	2200Ω	½		BTS-2200	Sync Ph. Inv. Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R52A	22KΩ	½		BTS-22K	Integrator Network
B	8200Ω	½	*	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R53	1.5Meg	½		BTS-1.5Mpg	Vert. Osc. Grid
R54	10KΩ	½		BTS-10K	Vert. Osc. Trans. Shunt
R55	22KΩ	½		BTS-22K	Vert. Osc. Plate
R56	1.5 Meg	½		BTS-1.5Meg	Vert. Discharge Plate - See Note 1
R57	56KΩ	½		BTS-56K	Vert. Discharge Plate Decoupling
R58	470KΩ	½		BTS-470K	Voltage Divider
R59	8200Ω	½		BTS-8200	Vert. Peaking
R60	2.2Meg	½		BTS-2.2Meg	Vert. Output Grid
R61	680Ω	½		BTS-680	Vert. Output Cathode
R62	100KΩ	½		BTS-100K	Horiz. Ph. Det. Diode Load
R63	100KΩ	½		BTS-100K	Horiz. Ph. Det. Diode Load
R64	4.7Meg	½		BTS-4.7Meg	Horiz. Ph. Det. Diode Load
R65	470KΩ	½		BTS-470K	Horiz. AFC Filter
R66	5600Ω	½		BTS-5600	Horiz. M. V. Plate
R67	1500Ω	1		BTS-1500	Horiz. M. V. Cathode
R68	100KΩ	½		BTS-100K	Horiz. M. V. Grid
R69	270KΩ	½		BTS-270K	Horiz. M. V. Plate
R70	56KΩ	½		BTS-56K	Horiz. M. V. Plate Dec.
R71	4700Ω	½		BTS-4700	Horiz. Peaking
R72	56Ω	½			Parasitic Suppressor
R73	1Meg	½		BTS-1Meg	Horiz. Output Grid See Note 2
R74	25KΩ	10		1 3/4A-25K	Horiz. Output Screen - Wire Wound
R75	47Ω	1			Horiz. Output Cathode - See Note 3
R76	3.3Ω	½			H. V. Rect. Filament
R77	470KΩ	2			H. V. Filter
R78	15KΩ	½		BTS-15K	Horiz. Feedback
R79	3300Ω	2		BTB-3300	Voltage Divider
R80	330Ω 20%	2		BTB-330	Focus Coil Shunt
R81	27Ω	1			Horiz. Output Cathode - See Note 4

Note 1. Some Models may use a 2.7Meg Resistor in this application
• Items C52A, C52B, C52C, R52A, R52B and R52C are combined in one unit
Note 2. Some Models may use a 470KΩ Resistor in this application
Note 3. Some Models may use a 120Ω Resistor in this application
Note 4. Not used in all Models

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ② 1.94A	800VCT ② 220ADC	5VAC ② 3A	6.3VAC ② 7.8A SEC. 4 6.3VAC ② .75A			P-3087	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	170Ω	1000Ω		A-8111 ②	A-3000 ②	TS0-2 ②	Vert. Osc. Trans.
T3	325Ω	7.5Ω Tap ①					Horiz. Output Trans.
	Tap ① 20Ω	SEC. 2 5.5Ω					
		SEC. 2 1.7Ω					
		SEC. 3 0Ω					
T4	1230Ω			A-8123	A-3037	TS0-8	Vert. Output Trans.
T5A	Tap ① 10Ω 8.5Ω			DY-8	MDF-70		Horiz. Deflection Coils
B	45Ω						Vert. Deflection Coils
T6	400Ω			FC-11			Focus Coil

② Drill one new mtg. hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T7	7.6KΩ	3.2Ω	365Ω	.7Ω		A-3849	A-3020	RO-201	

PHILHARMONIC MODELS 520, 620, 720, 724, 820, 824, 5820, 6120, 7120, 7820, 8120, 8820

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Philharmonic PART No.	MERIT PART No.	
L1	Ant. Coil	0Ω				
L2	Fil. Choke	0Ω				
L3	RF, Mixer Grid & Osc.	0Ω				
L4	Fil. Choke	0Ω				
L5	Conv. Plate & IF Trap	1.6Ω	0Ω			
L6	1st. Video IF	1Ω				
L7	Fil. Choke	0Ω				
L8	2nd. Video IF	.2Ω	.2Ω			
L9	3rd. Video IF	.2Ω	.2Ω			
L10	4th. Video IF	.2Ω	.2Ω			
L11	Peaking Coil	2.4Ω			TV-180	White, 36 Microhenries
L12	Peaking Coil	9.5Ω				Red, 375 Microhenries
L13	Peaking Coil	6.8Ω			*TV-185	Blue, 225 Microhenries, Wound on 10K resistor
L14	4.5MC Trap	1.8Ω			TV-151	
L15	Peaking Coil	11Ω				Green, 510 Microhenries
L16	Sound IF	1.8Ω			TV-151	
L17	Ratio Det.	4.2Ω	.2Ω		TV-110	Tertiary Winding .7Ω
L18	Horiz. Osc.	47Ω			TV-163	
L19	Width Coil	.45Ω				
L20	Horiz. Lin.	22Ω			MWC-1	

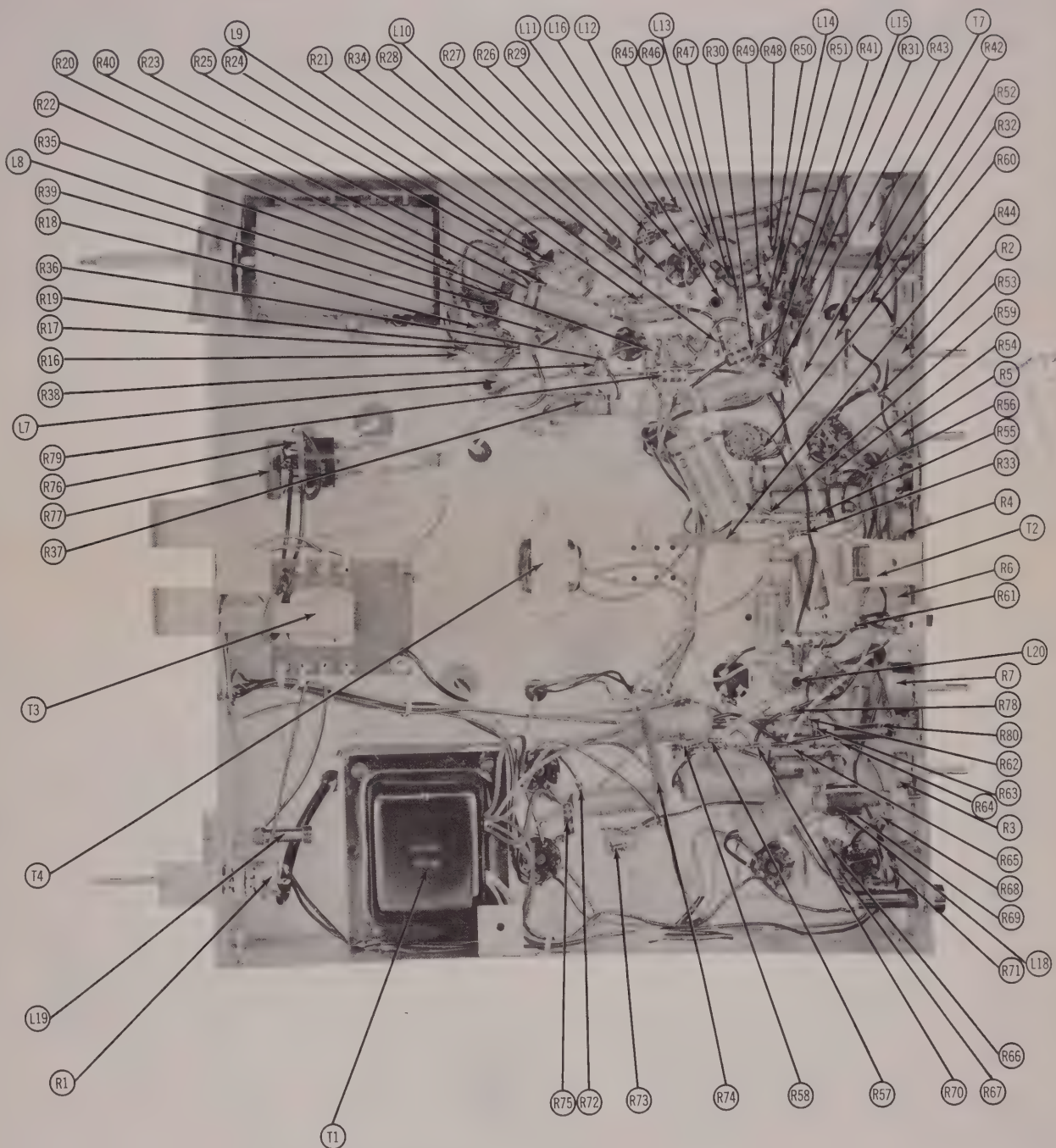
*Parallel with 10K resistor

FUSES

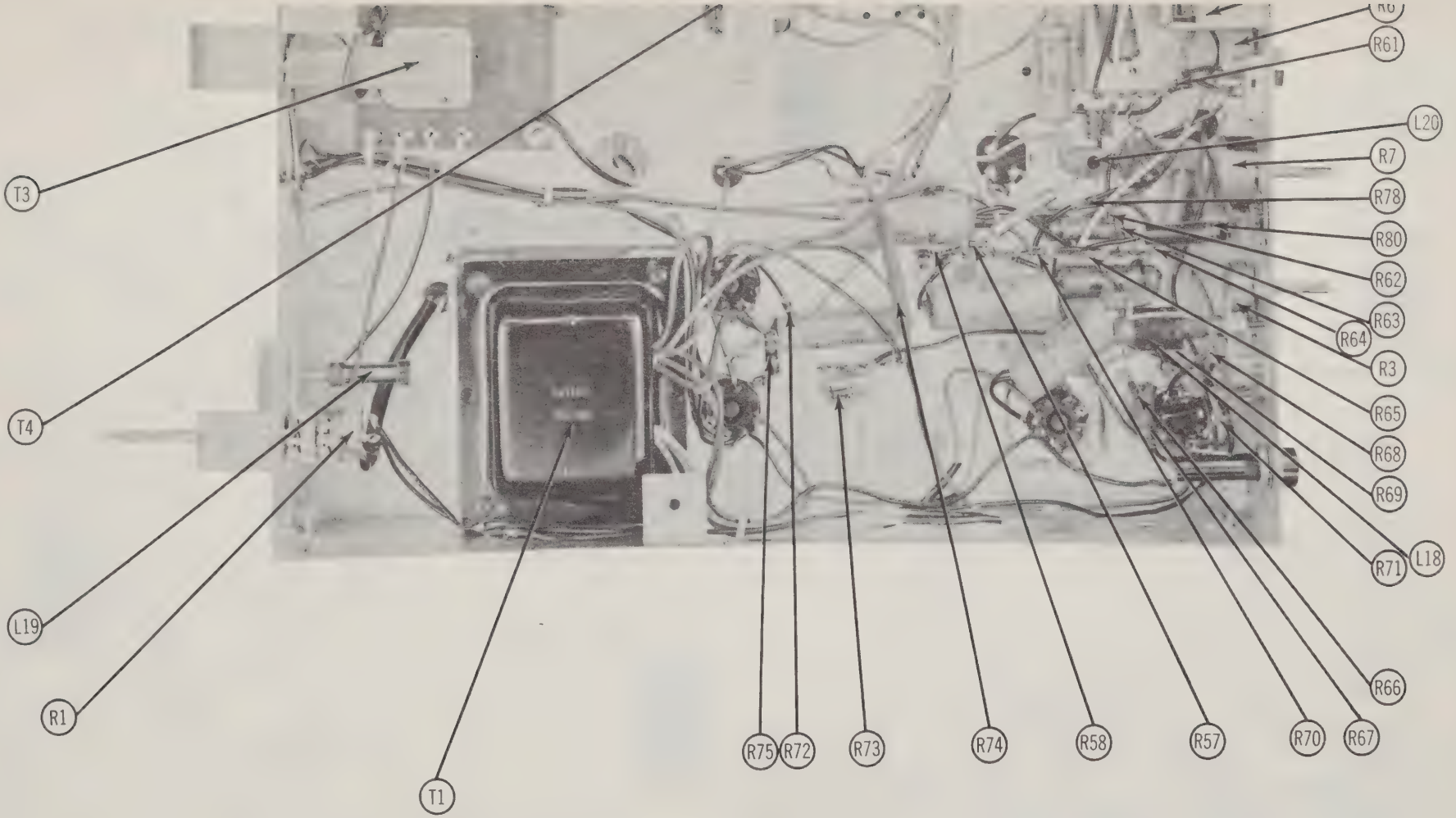
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Philharmonic PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	5A. 250V.			312005	341001	MTH5	HKP
M2	3AG Pigtail	1/4A. 250V.			318.250		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	Philharmonic PART No.	NOTES
M3	RF tuner		
M4	Crystal		IN64
M5	Switch		TV-Phono



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

RCA VICTOR MODEL 45-EY-4 (Ch. RS140)

PROTECTED
3000 MEADE ST.
DENVER, COLORADO

RCA VICTOR
MODEL 45-EY-4 (Ch. RS140)

RCA VICTOR
MODEL 45-EY-4 (Ch. RS140)

TRADE NAME	RCA Victor Model 45-EY-4(Ch.RS 140)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N. J.
TYPE SET	AC Operated Audio Amplifier with 45 RPM Automatic Record Changer
TUBES (FOUR)	Types 12SC7 AF Amp.-Phase Inv., (2) 35L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycle RATING .300 Amp. @117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT RP190-2 - SEE PHOTOFACT SET #144 - FOLDER #7

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

RCA VICTOR
MODEL 45-EY-4 (Ch. RS140)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA VICTOR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	AF Amplifier - Phase Inverter	12SC7	12SC7	8S	
V2	Audio Output	35L6GT	35L6GT	7AC	
V3	Audio Output	35L6GT	35L6GT	7AC	
V4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA VICTOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	75980	PRS150/80-40		BRD8415		TVA-1418	Filter (Red)
B	50	150						TVA-1414	Filter (Green)
C2	5	50	74521	PRS150/4		BR550		TVA-1303	AF Amp. Cathode
C3	.047	400	73553	P488-047	DF-503	PTE4S47		4TM-S47	Phono Isolation
C4	.01	200	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C5	68		93514	SI68	D6-680	5W5Q7	GPIK-680	5GA-Q68	Tone Comp.
C6	.0068	400	73789	P488-0068	D6-682	PTE6D68	GP2-333-682	6TM-D68	Tone Comp.
C7	.015	400	73797	P488-015		PTE6S15		6TM-S15	Tone Comp.
C8	.0022	600	73595	P688-0022	D6-222	PTE6D22	GP2-333-222	6TM-D22	Tone Comp.
C9	.0056	400	73788		D6-562		GP2-333-562		Audio Coupling
C10	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C11	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C12	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C13	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C14	.047	400	73553	P488-047	DF-503	PTE4S47		4TM-S47	Line Isolation

CONTROLS

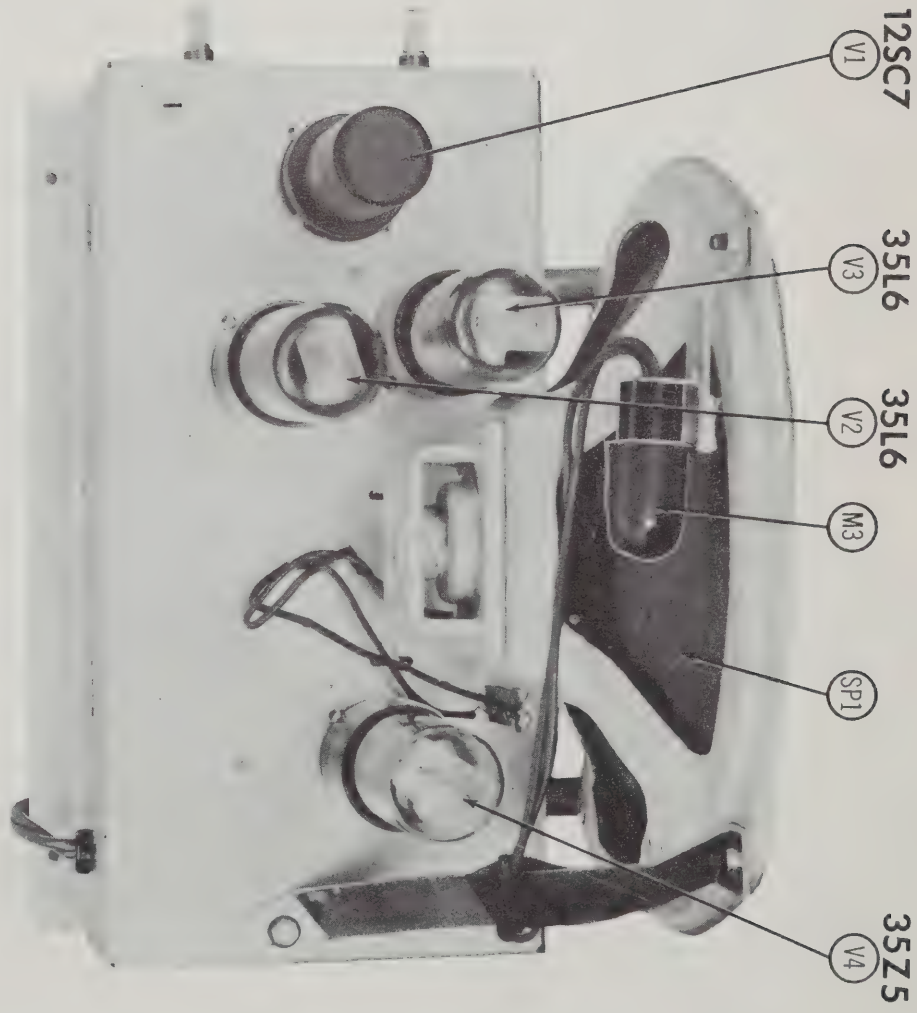
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA VICTOR PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2Meg	1/2	75538	Q11-139	AG-83-S	B-75	Tone Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
R2A	1.5Meg	1/2	70342		AT-95		Volume Control - Tapped @ 150KΩ & 300KΩ
B	Shaft		Not Req.		FS-3		Attach to R2A per instructions
C	Switch		Not Req.		SW-A		Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA VICTOR PART No.	IRC PART No.	IDENTIFICATION CODES
R3	2.2Meg	1/2	504522	BTS-2.2Meg	Phono Shunt
R4	560KΩ	1/2	503456	BTS-560K	Tone Compensation
R5	39KΩ	1/2	503339	BTS-39K	Tone Compensation
R6	27KΩ	1/2	503327	BTS-27K	Tone Compensation
R7	3900Ω	1/2	503239	BTS-3900	AF Amp. Cathode
R8	220KΩ	1/2	503422	BTS-220K	AF Amp. Plate
R9	15KΩ	1/2	503315	BTS-15K	Phase Inverter Grid
R10	220KΩ	1/2	503422	BTS-220K	Phase Inverter Plate
R11	91KΩ	1/2			Tone Compensation - See Note
R12	470KΩ	1/2	503447	BTS-470K	Output Grid
R13	82Ω	1	513082		Output Cathode
R14	470KΩ	1/2	503447	BTS-470K	Output Grid
R15	1000Ω	1	514210	BTA-1000	Filter
R16	15Ω	1	514015		Surge Limiter
R17	150Ω	1/2	503115	BTS-150	Pilot Light Shunt

Note. Some Models use a 100KΩ Resistor in this application

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA VICTOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	5KΩCT	3.6Ω	230ΩCT	.4Ω	73008	A-3856 ①	A-2900 ①	RO-302 ①	① Bend Mtg. tabs down and mount in original chassis slots.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	RCA VICTOR PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	4.1Ω	74664	Mod. P8-T ST-119	8A21	
	CONE DIA.	V. C. DIA.				
SP1B	7½"	3/4"				

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	RCA VICTOR PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	75575	CAC-J or AC-J	Q-33 A-1	W31AR	A53MG	34	0-1 or S-1	

ASTATIC, SHURE, AND ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	RCA VICTOR PART No.	WALCO PART No.	JENSEN PART No.	
M2	75770	W-44MGS	M-74LP	

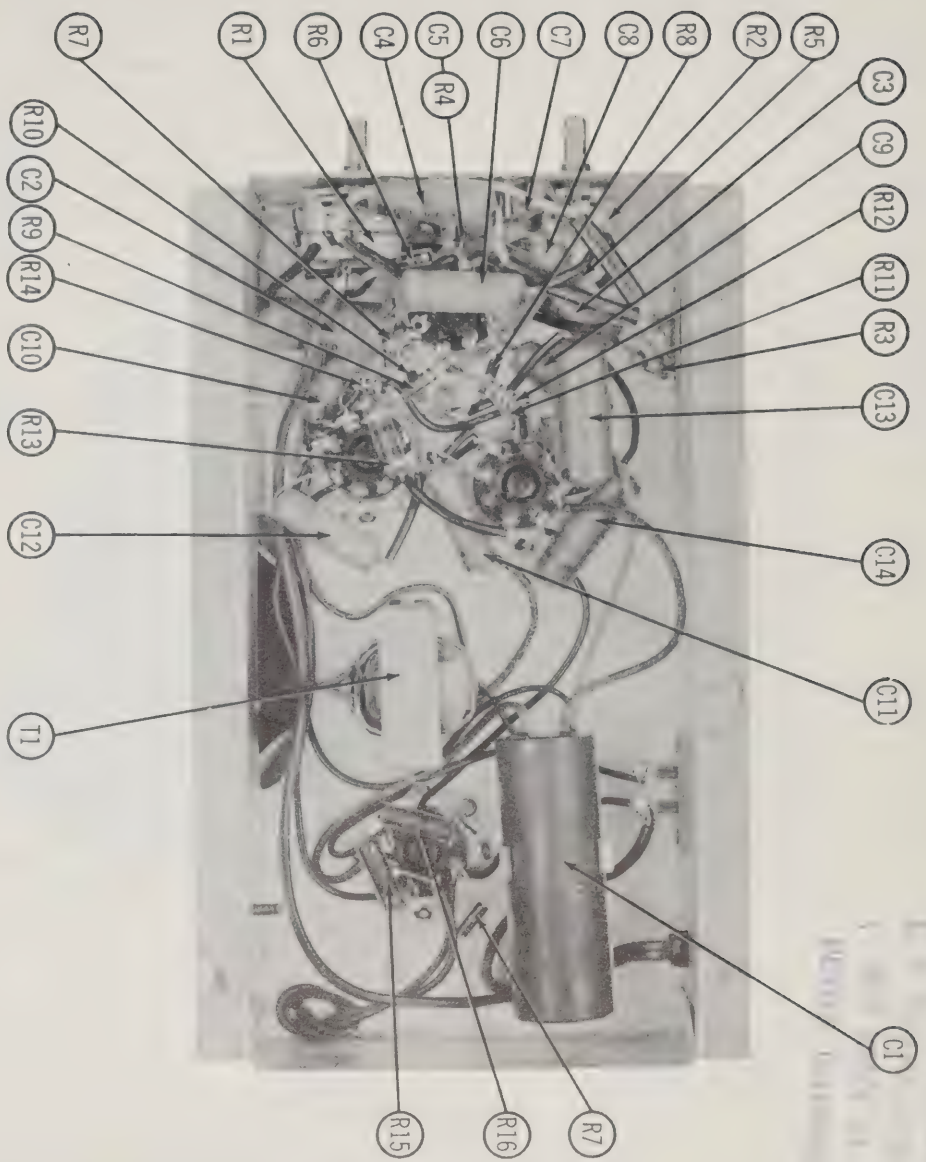
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA VICTOR PART No.		
M3	Bayonet	7.5	.2	White	11765		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
	Cabinet	76778	Less Lid & Hinges
	Lid	76784	For Cabinet
	Hinge	85955	Cabinet Lid
	Knob	76719	

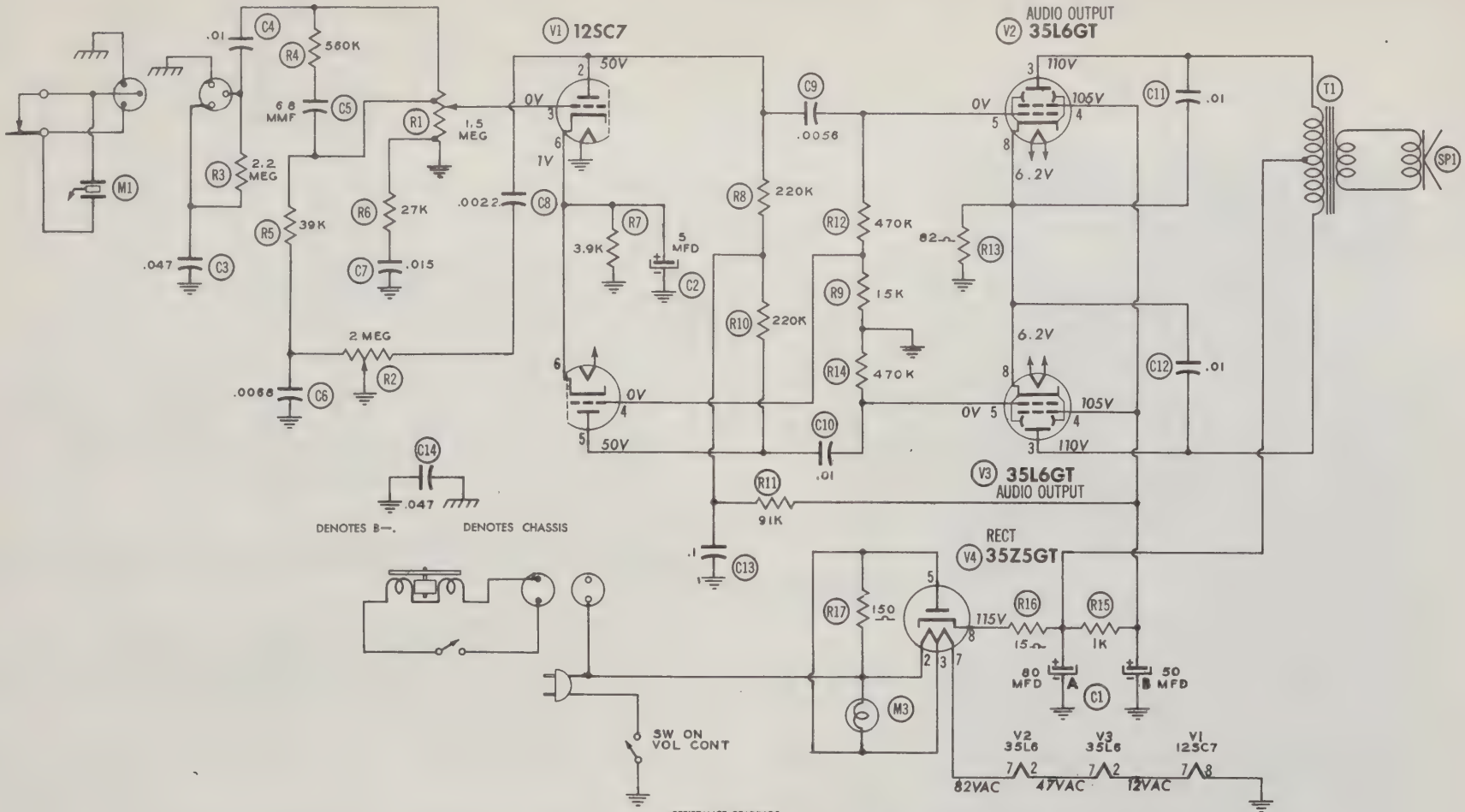
CHASSIS—BOTTOM VIEW



SET 173 FOLDER 11

RCA VICTOR MODEL 45-EY-4(Ch. RS140)

RCA VICTOR MODEL 45-EY-4(Ch. RS140)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SC7	INF	†310KΩ	25Ω	15KΩ	†310KΩ	3.9KΩ	12Ω	0Ω
V 2	35L6GT	INF	47Ω	†130Ω	†1KΩ	485KΩ	0Ω	82Ω	82Ω
V 3	35L6GT	INF	12Ω	†130Ω	†1KΩ	470KΩ	0Ω	47Ω	82Ω
V 4	35Z5GT	INF	117Ω	109Ω	†1KΩ	109Ω	†15Ω	82Ω	70KΩ

† MEASURED FROM PIN 8 OF V4

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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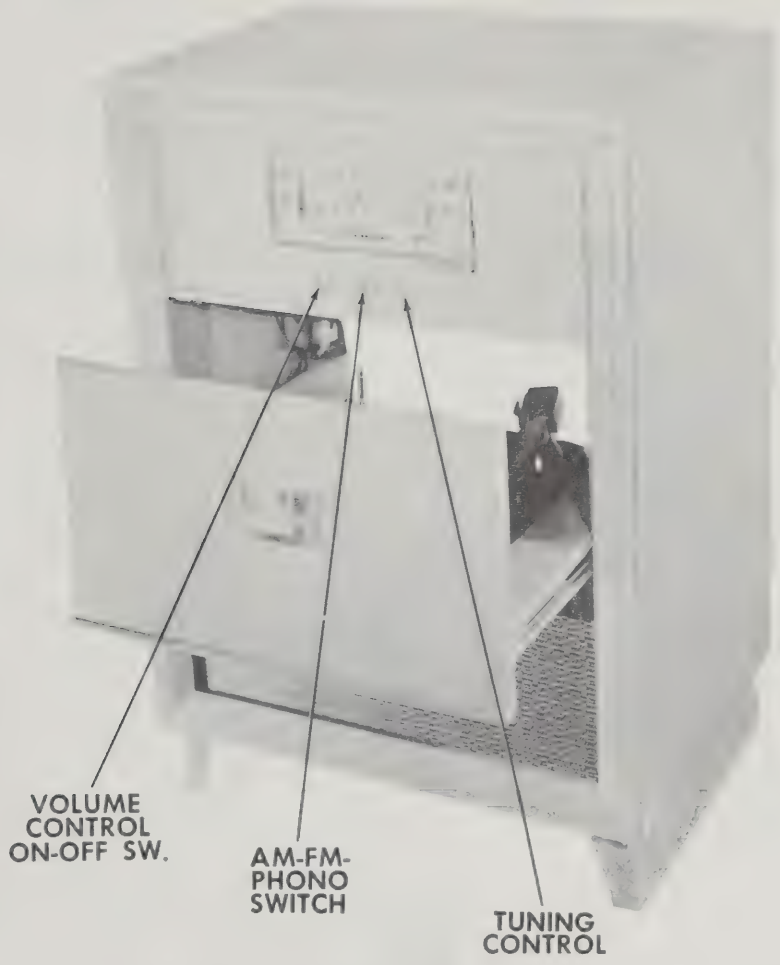
1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

SILVERTONE
MODELS 1054, 1055 (Ch. 132.012)



SILVERTONE
MODELS 1054, 1055 (Ch. 132.012)

SILVERTONE MODEL 1055

TRADE NAME	Silvertone Models 1054, 1055 (Ch.132.012)	
SUPPLIER	Sears, Roebuck & Co., Inc., 925 S. Homan St., Chicago, Ill.	
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver	
TUBES (EIGHT)	Types 6BA6 FM RF Amp., 12AT7 FM Conv., 6BE6 AM Conv., 6BA6 1st. FM AM IF Amp., 6BA6 2nd. FM IF Amp., 6T8 Ratio Det.-AM Det-AVC-AF Amp., 6V6GT Audio Output, 6X4 Rectifier	
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING .370 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600 KC	FREQ: MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT 132.216 - SEE SIMILAR V-M MODEL 950 - PHOTOFACT SET #107 - FOLDER #13 · OR RECORD CHANGER MANUAL CM-3.

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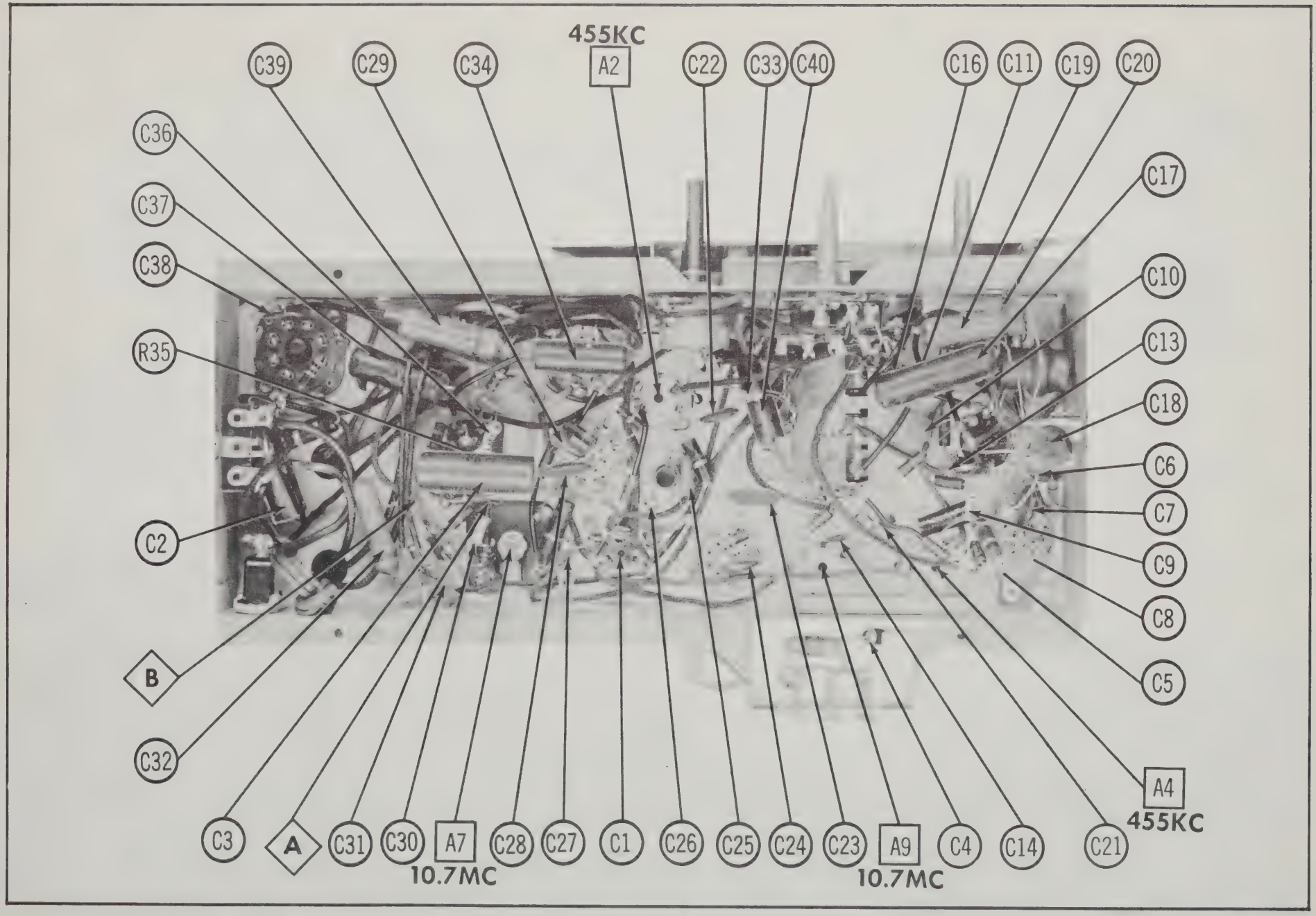
455KC
A2
C39
C29
C34
C22
C33
C40
C16
C11
C19
C20
C36
C17
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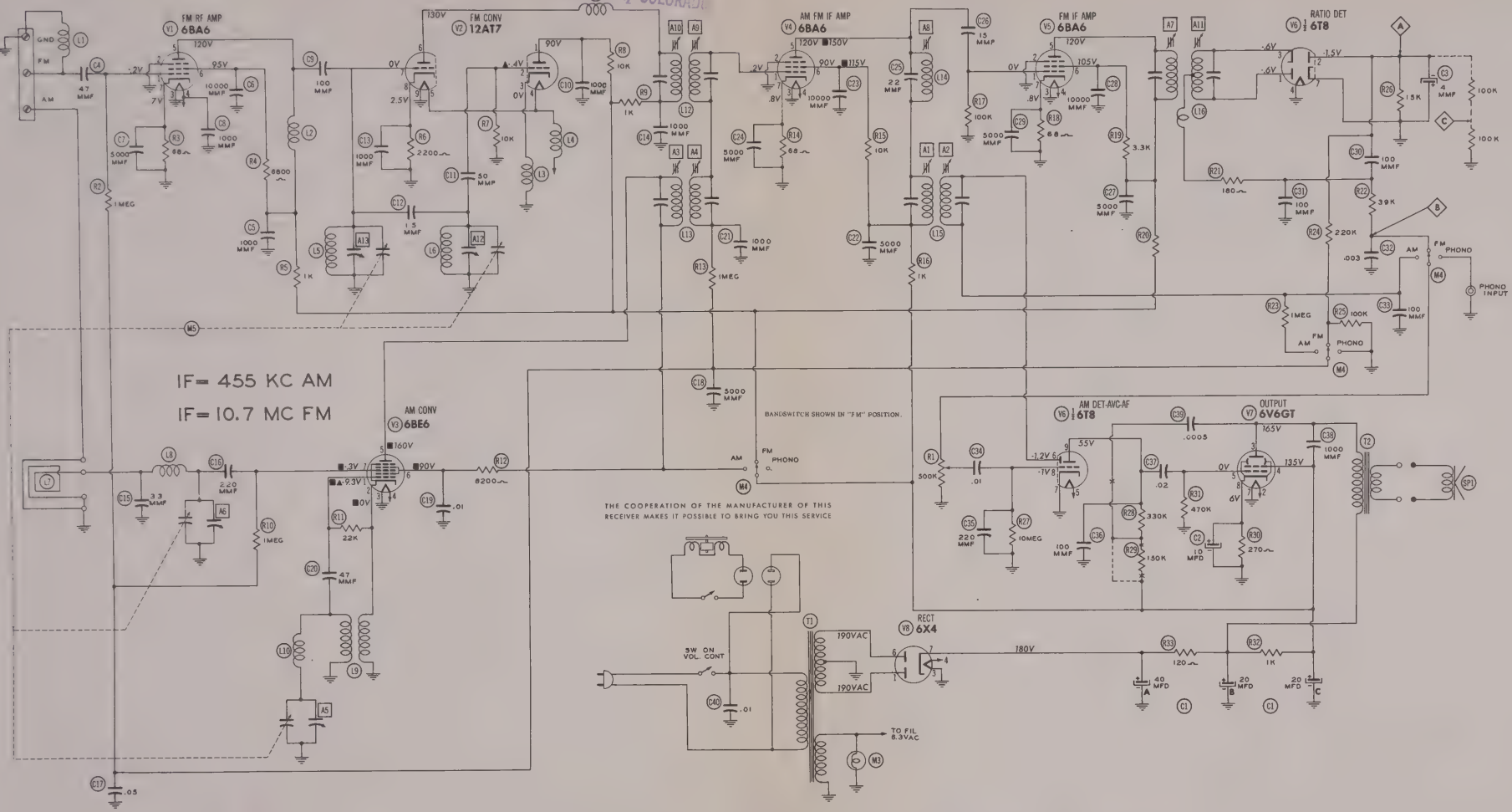
C10
R35
C13
C18
C6
C2
C7
C9
C8
B
C5
C32
A4
455KC
C3
A
C31
C30
A7
C28
C27
C1
C26
C25
C24
C23
A9
C4
C14
C21
10.7MC
10.7MC

3924 MEAD ST.
DENVER, COLORADO



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	1Meg	0Ω	0Ω	.1Ω	†2.1KΩ	†9KΩ	68Ω		
V 2	12AT7	†1MΩ	10KΩ	.4Ω	.8Ω	.6Ω	†2.1KΩ	0Ω	2.2KΩ	0Ω
V 3	6BE6	22KΩ	.5Ω	0Ω	.1Ω	■†1.1KΩ	■†9.3KΩ	■2.5Meg		
V 4	6BA6	1Meg ■2.5Meg	0Ω	0Ω	.1Ω	†2.1KΩ	†12KΩ	68Ω		
V 5	6BA6	100KΩ	0Ω	0Ω	.1Ω	†2.1KΩ	†5.4KΩ	68Ω		
V 6	6T8	540KΩ	15KΩ	540KΩ	0Ω	.1Ω	■500KΩ	0Ω	10Meg	†480KΩ
V 7	6V6GT	DCF	.1Ω	‡415Ω	†1.1KΩ	470KΩ	DNF	0Ω	270Ω	
V 8	6X4	160Ω	†1.1KΩ	0Ω	.1Ω	†1.1KΩ	170Ω	80KΩ		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED
† MEASURED FROM PIN 1 OF V8
■ MEASURED IN AM POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		Silvertone PART No.	STANDARD REPLACEMENT		
V1	FM RF Amplifier	6BA6	6BA6	7BK	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	6BE6	6BE6	7CH	
V4	FM AM IF Amp.	6BA6	6BA6	7BK	
V5	FM IF Amplifier	6BA6	6BA5	7BK	
V6	Ratio Detector-AM Detector-AVC-AF Amplifier	6T8	6T8	9E	
V7	Audio Output	6V6GT	6V6GT	7AC	
V8	Rectifier	6X4	6X4	5BS	

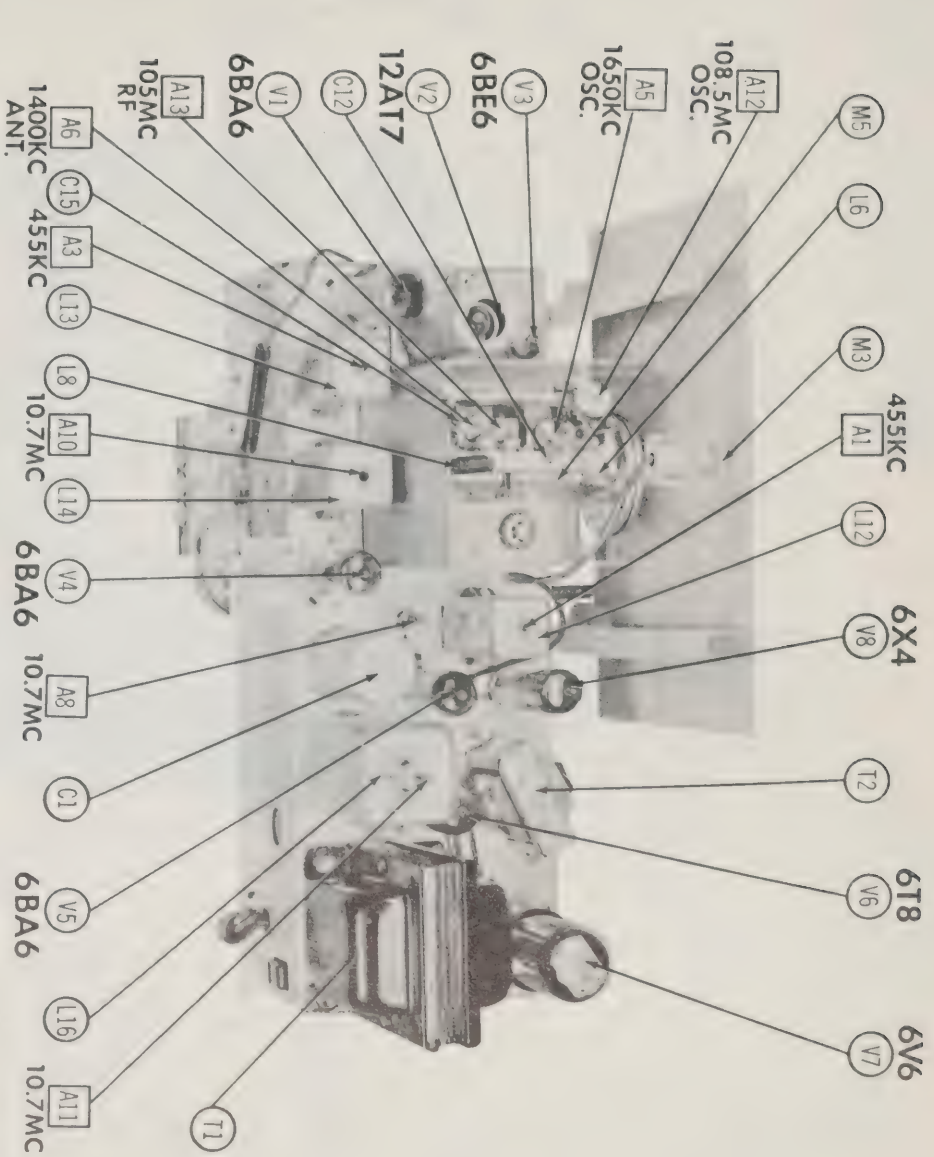
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	250	N22806	AFH3-20		UP42225		TVL-3540	■ Filter
B	20	250							▲ Filter
C	20	250							Decoupling
C2	10	25	N22602	PRS25/10		BR102A		TVA-1204	Audio Output Cathode
C3	4	25	N22659	PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C4	47			SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	FM RF Coupling
C5	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	FM RF Amp. Plate Dec.
C6	10000			BPD-01	DD-103	TM5S1	821-01	5HK-S1	FM RF Amp. Screen
C7	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	FM RF Amp. Cathode
C8	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	FM RF Amp. Fil.
C9	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	FM RF Coupling
C10	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	FM Osc. Plate Bypass
C11	50						N750K-500		FM Osc. Grid Cap.
C12	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5		FM Osc. Coupling
C13	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	FM Mixer Cathode
C14	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	FM Mixer Plate Dec.
C15	3.3						N220K-3R3		Fixed Trimmer
C16	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AM RF Coupling
C17	.05	200		P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C18	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	AVC Filter
C19	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AM Osc. Anode Bypass
C20	47			SI47	D6-470	5R5Q5	GP1K-470	5GA-Q47	AM Osc. Grid Cap.
C21	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	AVC Filter
C22	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. IF Amp. Plate
C23	10000			BPD-01	DD-103	TM5S1	821-01	5HK-S1	1st. IF Amp. Screen
C24	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. IF Amp. Cathode
C25	22			1469-000025		5R5Q25		MS-425	Fixed Trimmer
C26	15			SI15	D6-150	5W5Q15	GP1K-150	5GA-Q15	FM IF Coupling
C27	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. FM IF Amp. Plate
C28	10000			BPD-01	DD-103	TM5S1	821-01	5HK-S1	2nd. FM IF Amp. Screen
C29	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. FM IF Amp. Cathode
C30	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Diode Load Cap.
C31	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Bypass
C32	.003	600		P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	De-emphasis
C33	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Diode RF Filter
C34	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C35	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Grid Filter
C36	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	AF Amp. Plate Bypass
C37	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C38	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	Audio Output Plate †
C39	.0005	600		1468-0005	D6-501	PTE6T5	GP2K-501	6TM-T5	Audio Output Plate *
C40	.01	400		489ZGXY-01		PJ4S1		4TM-S1	Line Filter

† Some models use .02MFD in this application
* Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	N22963	Q13-133	AG-60-Z	B-60-S	Volume Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	Silvertone PART No.	IRC PART No.	
R2	1Meg	½		BTS-1Meg	FM RF Amp. Grid
R3	68Ω	½			FM RF Amp. Cathode
R4	6800Ω	1			FM RF Amp. Screen
R5	1000Ω	½		BTS-1000	FM RF Amp. Decoupling
R6	2200Ω	½		BTS-2200	FM Mixer Cathode
R7	10KΩ	½			FM Osc. Grid
R8	10KΩ	½			FM Osc. Plate
R9	1000Ω	½		BTS-1000	FM Osc. Plate Decoupling
R10	1Meg	½		BTS-1Meg	Converter Grid
R11	22KΩ	½			AM Osc. Grid
R12	8200Ω	1			AM Osc. Anode
R13	1Meg	½		BTS-1Meg	AVC Network
R14	68Ω	½			1st. IF Amp. Cathode
R15	10KΩ	1			1st. IF Amp. Screen
R16	1000Ω	½		BTS-1000	1st. IF Amp. Decoupling
R17	100KΩ	½			2nd. FM IF Amp. Grid
R18	68Ω	½			2nd. FM IF Amp. Cathode
R19	3300Ω	1		BTA-3300	2nd. FM IF Amp. Screen
R20	1000Ω	½		BTS-1000	2nd. FM IF Amp. Decoupling
R21	180Ω	½		BTS-180	Balancing
R22	39KΩ	½		BTS-39K	De-emphasis
R23	1Meg	½		BTS-1Meg	AVC Network
R24	220KΩ	½		BTS-220K	AVC Network
R25	100KΩ	½		BTS-100K	AVC Network
R26	15KΩ	½		BTS-15K	Ratio Det. Diode Load
R27	10Meg	½		BTS-10Meg	AF Amp. Grid
R28	330KΩ	½		BTS-330K	AF Amp. Plate
R29	150KΩ	½		BTS-150K	AF Amp. Plate - See Note
R30	270Ω	1		BTA-270	Output Cathode
R31	470KΩ	½		BTS-470K	Output Grid
R32	1000Ω	10		1 3/4A-1000	Filter - Wire Wound
R33	120Ω	1		BW-1-120	Filter - Wire Wound

Note. Not used in all Models

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .370A	380VCT .055 ADC	6.3VAC @ 3.7A.		N-22959			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5.1KΩ	3.3Ω	295Ω	.4Ω	N-23669-1	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Silvertone PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.2Ω	D-24817		57A1	
	CONE DIA.	V. C. DIA.				
SP1B	5" X 7"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Silvertone PART No.	MERIT PART No.	
L1	FM Ant. Choke	.1Ω		N22648-1		
L2	RF Choke	.6Ω		N21445-1		
L3	Cath. Choke	.4Ω		N22597-1		
L4	Fil. Choke	.7Ω		N21673		
L5	FM RF Coil	0Ω		N22593		
L6	FM Osc. Coil	0Ω		N22594		
L7	AM Loop Ant.	.2Ω	1.8Ω	N24770		
L8	AM Ant. Choke	.5Ω				
L9	AM Osc. Coil	.5Ω	6.8Ω	N22587-1		
L10	Parasitic Suppressor	0Ω		N22334-1		
L11	Parasitic Suppressor	0Ω		N22335-1		
L12	1st. FM IF	1.1Ω	1.1Ω	N22590	FM254	
L13	1st. AM IF	9.6Ω	9.6Ω	N24771	BC-352	
L14	2nd. FM IF	.5Ω		N22967-1		
L15	2nd. AM IF	9.4Ω	9.4Ω	N22352	BC-353	
L16	Ratio Det.	.8Ω	.2Ω	N22592-1	*FM-252	Tap @ .3Ω

*Drill new mtg. holes

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	Silvertone PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		LT5-AG	D0AG	W66B	A66U	33	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

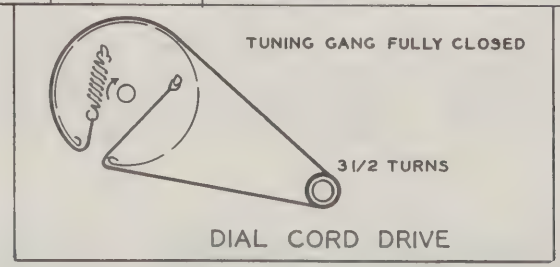
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Silvertone PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-6AGA	A-832	

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M4	Switch		Function Selector
M5	2 Gang Var. Cap.	N24773	(28-532MMF, 16-165MMF)
	Dial Scale	N25048	Model 1054 (Mahogony)
	Dial Scale	N25049	Model 1055 (Blonde)
	Dial Pointer	N24828	
	Knob	N22604-6A	ON/OFF -Vol. (Model 1054)
	Knob	N22604-7A	ON/OFF -Vol. (Model 1055)
	Knob	N22604-6B	AM-FM-Phono (Model 1054)
	Knob	N22604-7B	AM-FM-Phono (Model 1055)
	Knob	N22604-6C	Tuning (Model 1054)
	Knob	N22604-7C	Tuning (Model 1055)



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MODEL 350

SONORA
MODELS 350, 351

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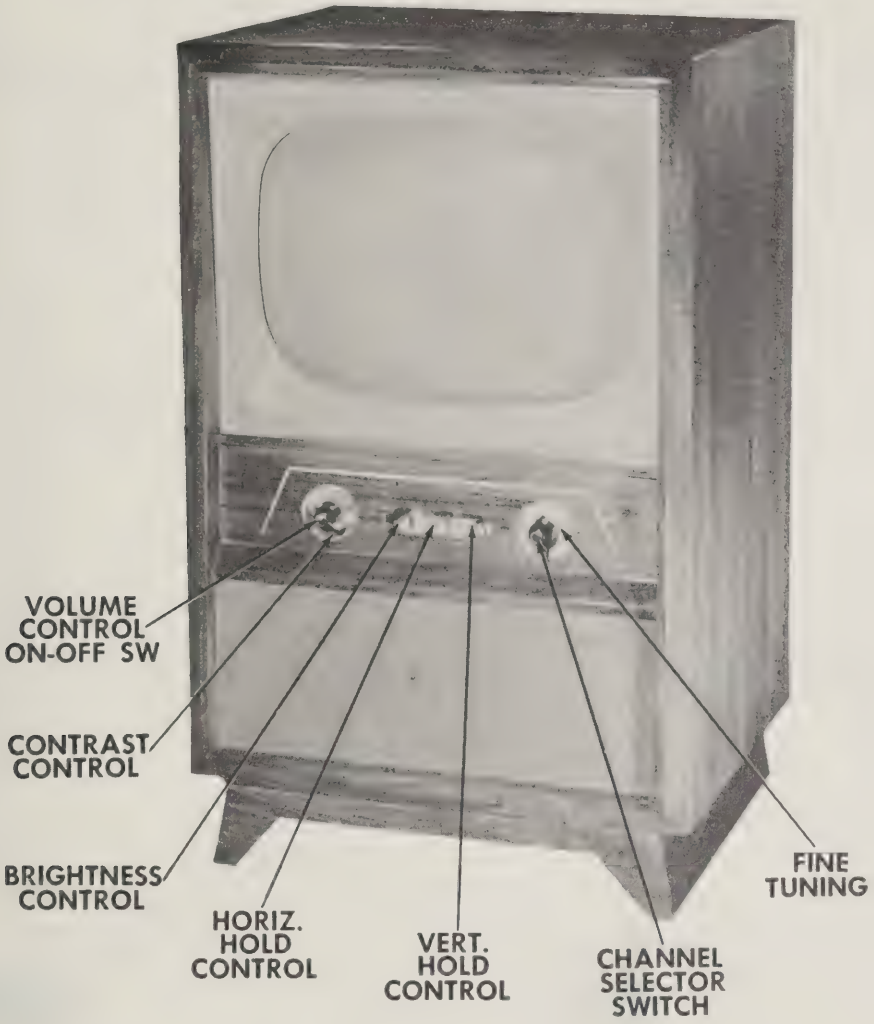
SONORA
MODELS 350, 351



SONORA
MODELS 350, 351

Sonora 350

TRADE NAME	Sonora Models 350, 351
MANUFACTURER	Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC - 60 Cycle
RATING	1.8 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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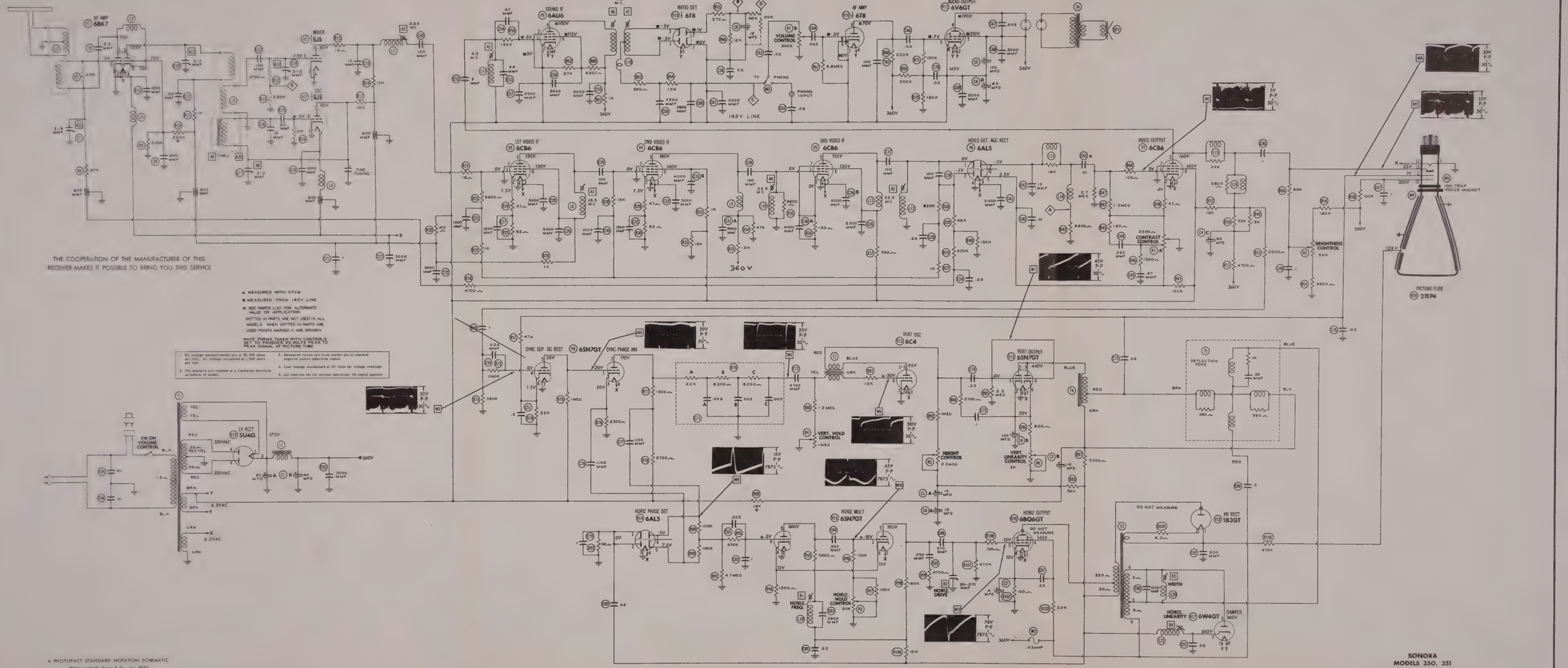
RF AMP V1 6BK7
MIXER V2 6J6
OSC V3 6J6
SOUND IF V15 6AU6
RATIO DET V10 6T8
AF AMP V10 6T8
AUDIO OUTPUT V11 6V6GT
VOLUME CONTROL
PHONO INPUT
145 V LINE
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
VIDEO DET AGC RECT V6 6AL5
VIDEO OUTPUT V7 6CB6
CONTRAST CONTROL
BRIGHTNESS CONTROL
PICTURE TUBE V20 21EP4
ION TRAP FOCUS MAGNET
SYNC SEP DC REST V8 6SN7GT
SYNC PHASE INV
VERT OSC V13 6C4
VERT OUTPUT V11 6SN7GT
VERT. HOLD CONTROL
HEIGHT CONTROL
VERT LINEARITY CONTROL
DEFLECTION YOKE
HORIZ PHASE DET V14 6AL5
HORIZ MULT V13 6SN7GT
HORIZ OUTPUT V20 6BQ6GT
HORIZ. FREQ.
HORIZ. HOLD CONTROL
HORIZ. DRIVE
DO NOT MEASURE
HV RECT V18 1B3GT
WIDTH
HORIZ. LINEARITY
DAMPER V17 6W4GT
LV RECT V15 5U4G
SW ON VOLUME CONTROL
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURED WITH VTVM
B MEASURED FROM 145 V LINE
C SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise noted
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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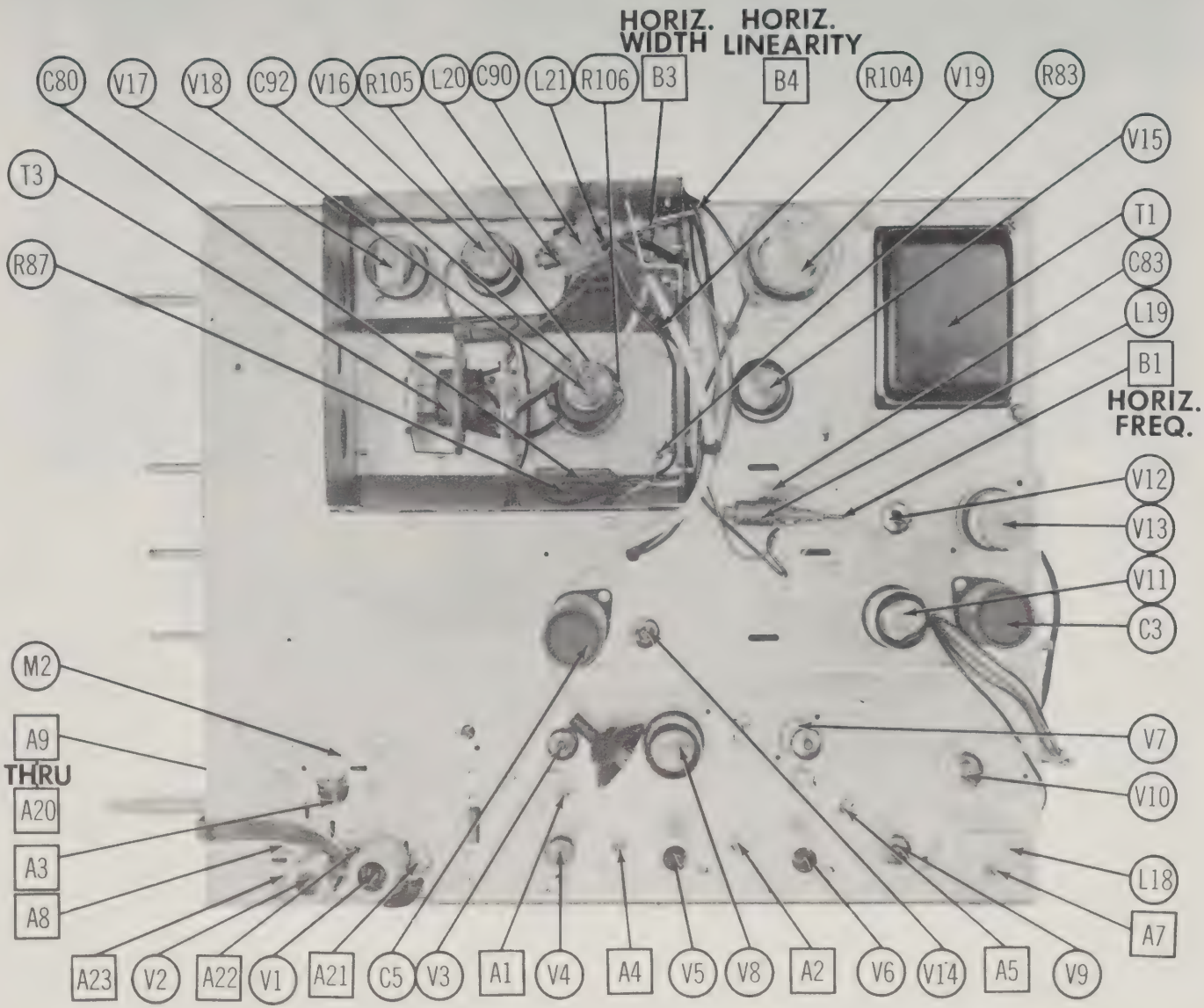
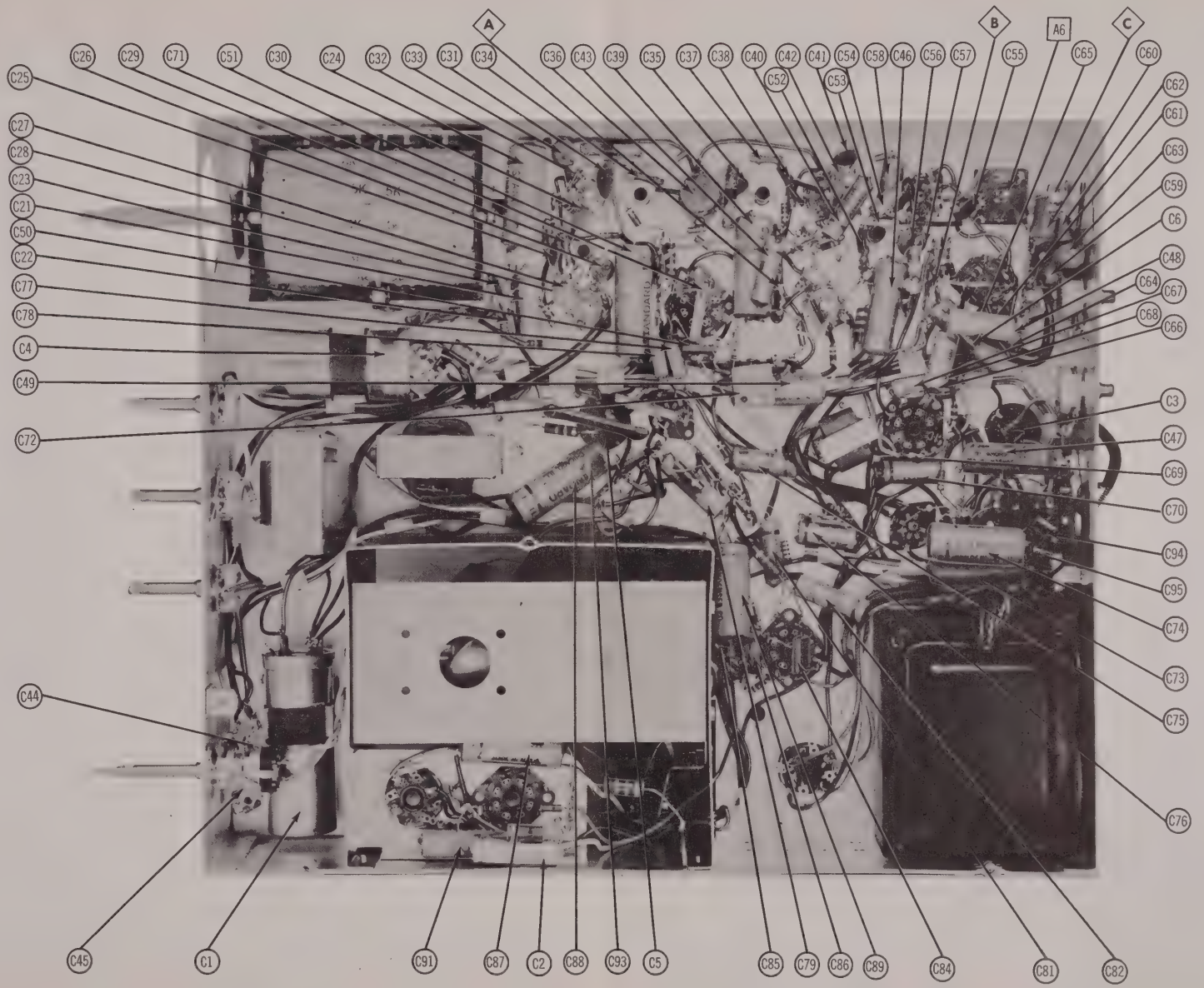
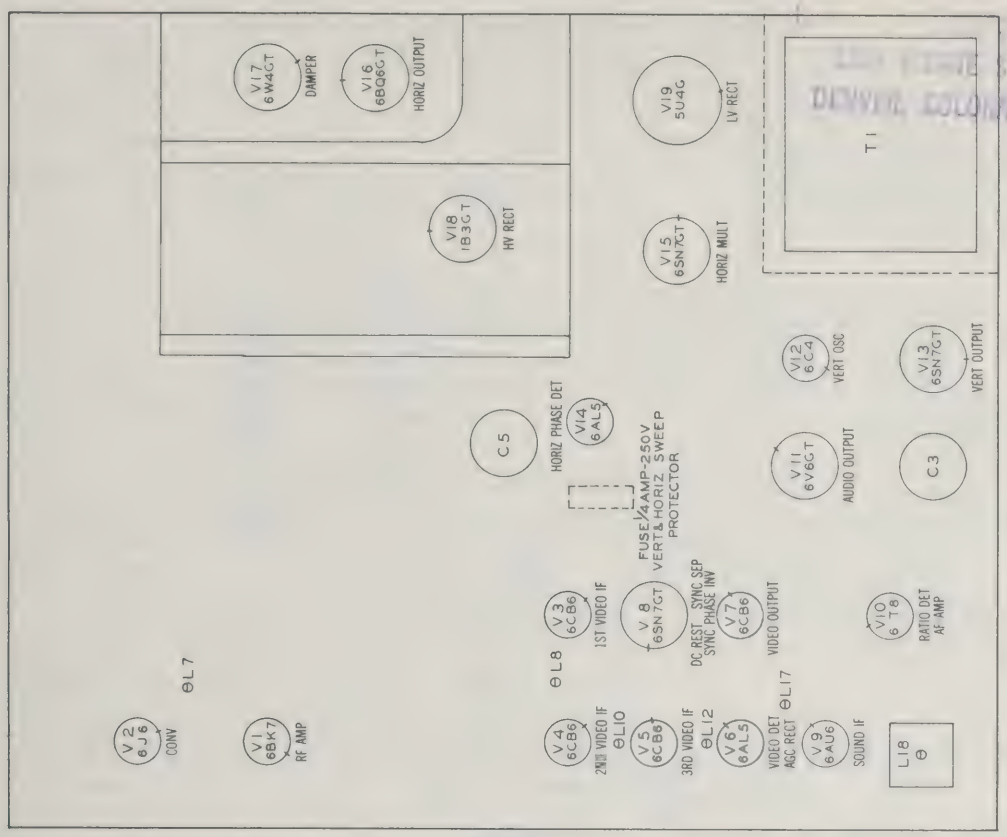


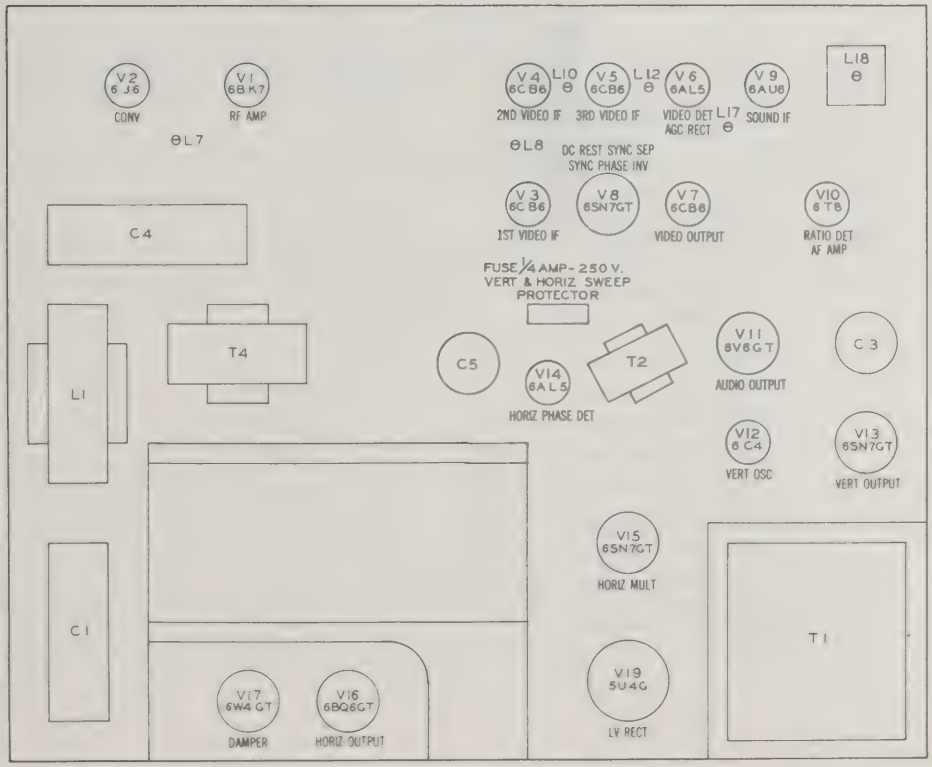
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube, V15.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25.5MC (unmod.)	Any	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain approximately 1 Volt at point A.
2.	"	"	23.0MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	22.8MC 26.1MC	Any	Vert. amp. to point (A). Low side to chassis.		Check for response curve as per fig. 1. If necessary readjust A1 thru A4 for desired response

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set contrast control at maximum.
Connect two matched 100KΩ resistors across R66. The junction of these two 100KΩ resistors is alignment Point (D).
During this portion of the alignment avoid touching or grounding the case of the VTVM as it is approximately 140V potential above ground.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A5, A6	Adjust for maximum deflection
5.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B) Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 2.
5.	"	"	"	"	"	Vert. amp. to point (C) Low side to chassis.	A7	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A8. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A8 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC	13	Vert. amp. to Point (A) Low side to chassis.	A9	Adjust to place video marker at 60% on high frequency side of response curve as per fig. 4.
			207MC (10MC swp.)	205.25MC	12		A10	
			201MC (10MC swp.)	199.25MC	11		A11	
			195MC (10MC swp.)	193.25MC	10		A12	
			189MC (10MC swp.)	187.25MC	9		A13	
			183MC (10MC swp.)	181.25MC	8		A14	
			177MC (10MC swp.)	175.25MC	7		A15	
			85MC (10MC swp.)	83.25MC	6		A16	
			79MC (10MC swp.)	77.25MC	5		A17	
			69MC (10MC swp.)	67.25MC	4		A18	
			63MC (10MC swp.)	61.25MC	3		A19	
			57MC (10MC swp.)	55.25MC	2		A20	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. thru 10KΩ to point (E). Low side to chassis.	A21, A22, A23	Adjust for maximum symmetrical response curve with markers at 90% as per fig. 5.
8.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check all channels for proper response as per fig. 5. If necessary for any channel, re-adjust A21, A22 and A23, then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

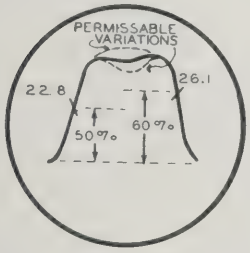


FIG.1

FIG. 2

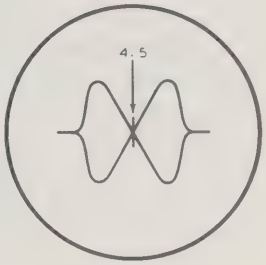


FIG. 3

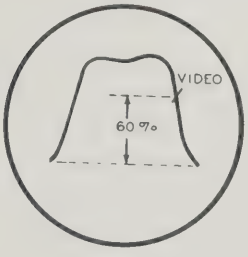


FIG.4

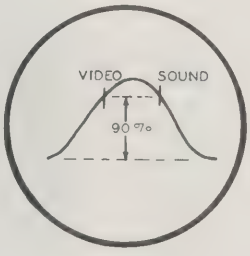
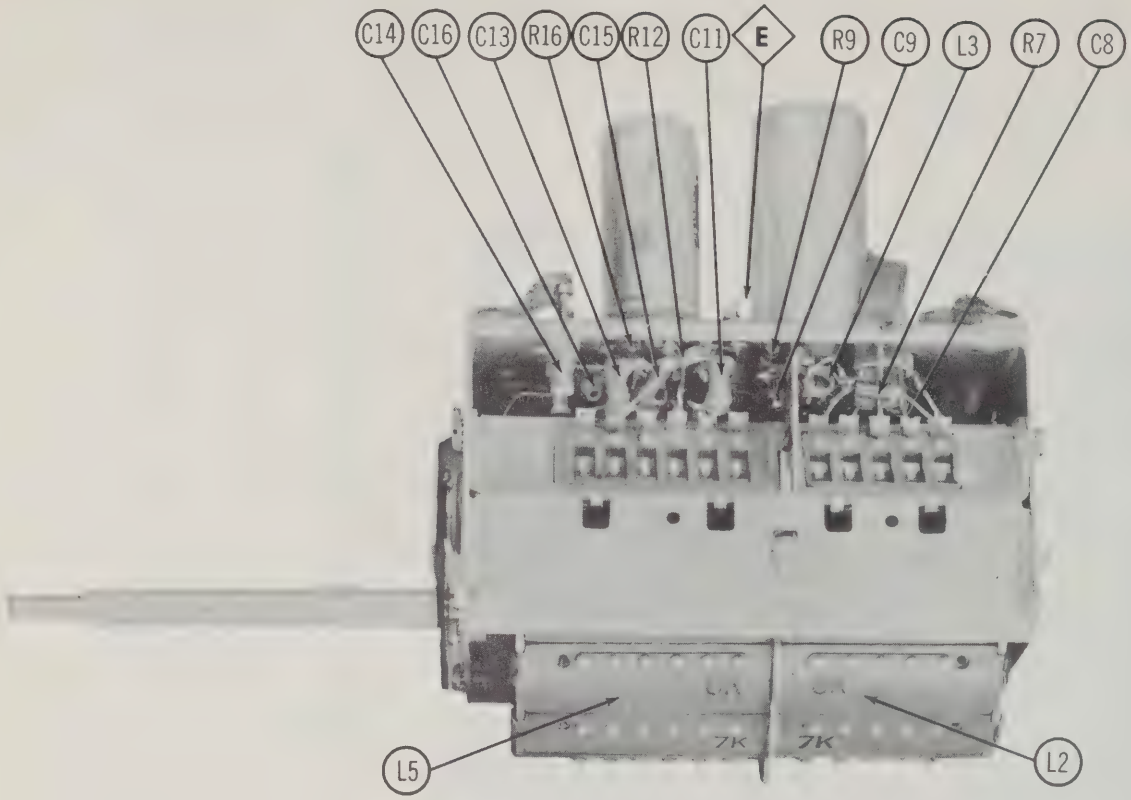


FIG.5

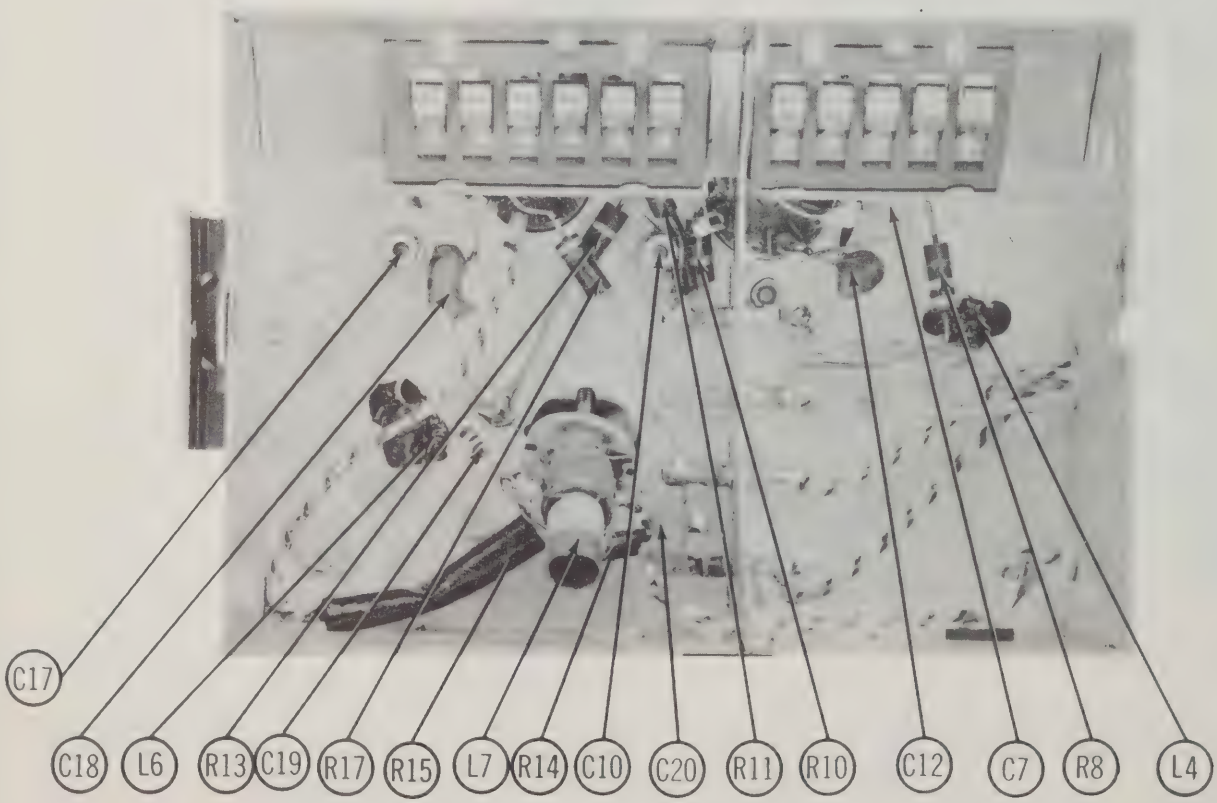
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	1Meg	0Ω	.2Ω	0Ω	■1.1KΩ	110KΩ	INF	0Ω
V 2	6J6	■10KΩ	■15KΩ	.2Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	130Ω	.1Ω	0Ω	■1.1KΩ	■1.1KΩ	0Ω		
V 4	6CB6	1Meg	130Ω	.1Ω	0Ω	†10KΩ	■1KΩ	0Ω		
V 5	6CB6	.2Ω	150Ω	.1Ω	0Ω	■560Ω	■560Ω	150Ω		
V 6	6AL5	.2Ω	215KΩ	.1Ω	0Ω	2.2KΩ	INF	6.8KΩ		
V 7	6CB6	1Meg	300Ω	.1Ω	0Ω	■13KΩ	■0Ω	0Ω		
V 8	6SN7GT	■1Meg	■4.2KΩ	2.2KΩ	1.1Meg	■1Meg	22KΩ	0Ω	.1Ω	
V 9	6AU6	■150KΩ	■0Ω	■0Ω	■.1Ω	†1KΩ	†9.2KΩ	■0Ω		
V 10	6T8	INF	■12KΩ	INF	■.1Ω	■0Ω	■0Ω	■0Ω	■6.8Meg	†220KΩ
V 11	6V6GT	INF	■.1Ω	†460Ω	†65Ω	230KΩ	130KΩ	■0Ω	10KΩ	
V 12	6C4	#3Meg	INF	.1Ω	0Ω	#3Meg	1.9Meg	0Ω		
V 13	6SN7GT	2.2Meg	#6.6KΩ	1.2KΩ	2.2Meg	#6.6KΩ	1.2KΩ	.1Ω	0Ω	
V 14	6AL5	56Ω	56Ω	0Ω	.1Ω	4.8Meg	INF	4.8Meg		
V 15	6SN7GT	110KΩ	#190KΩ	1.2KΩ	5.1Meg	#16KΩ	1.2KΩ	.1Ω	0Ω	
V 16	6BQ6GT	INF	.1Ω	INF	†33KΩ	470KΩ	INF	0Ω	100Ω	TOP CAP #55Ω
V 17	6W4GT	INF	INF	5Meg	INF	†75Ω	INF	■.1Ω	■0Ω	
V 18	1B3GT	PINS 1 THRU 8 HAVE INF RESISTANCE								TOP CAP #305Ω
V 19	5U4G	INF	16KΩ	INF	20Ω	INF	22Ω	INF	16KΩ	
V 20	21EP4	0Ω	70KΩ	PIN 10 †100KΩ	PIN 11 90KΩ	PIN 12 .1Ω				

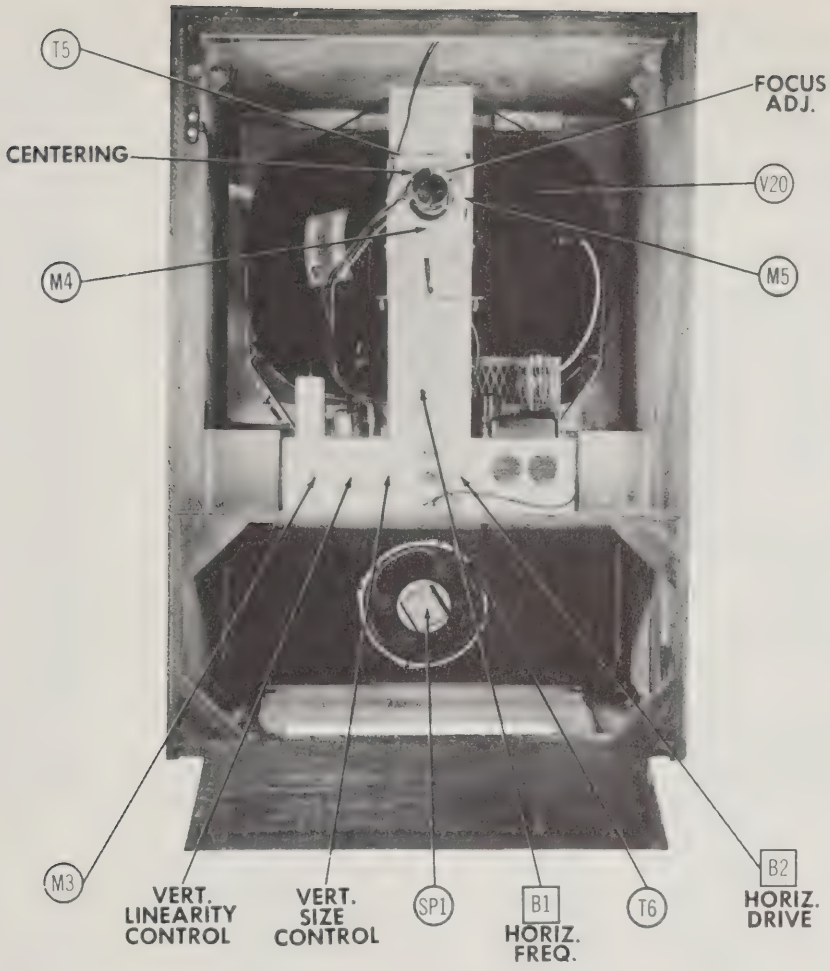
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 3 OF V17
■ MEASURED FROM 145VDC LINE



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

If unable to maintain satisfactory horizontal sync by means of the horizontal hold control set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) to lock-in the picture.

The horizontal drive (B2), should be turned clockwise as far as possible without producing a bright vertical line in the picture.

The width slug (B3) should be adjusted for a picture slightly wider than enough to fill the picture mask.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front Panel.
2. Remove 9 wood screws and 1 metal screw. Remove rear Cover.
3. Disconnect Built in Antenna and Speaker.
4. Remove 2 wood screws and remove antenna bracket.
5. Remove 2 wood screws holding Speaker. Remove Speaker.
6. Remove 4 Chassis Bolts. Remove Chassis.

NOTE. For Picture Tube removal it is necessary to remove chassis as outlined above.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier		6BK7	9AJ	
B	RF Amplifier		6BQ7	9AJ	
V2	Converter		6J6	7BF	
V3	1st. Video IF Amp.		6CB6	7CH	
V4	2nd. Video IF Amp.		6CB6	7CH	
V5	3rd. Video IF Amp.		6CB6	7CH	
V6	Video Detector-AGC Rectifier		6AL5	6BT	
V7	Video Output		6CB6	7CH	
V8	DC Restorer-Sync Separator-Sync Phase Inv.		6SN7GT	8BD	
V9	Sound IF Amp.		6AU6	7EK	
V10	Ratio Detector-AF Amplifier		6T8	9E	
V11	Audio Output		6V6GT	7AC	
V12	Vert. Oscillator		6C4	6BG	
V13	Vert. Output		6SN7GTA	8BD	
V14	Horiz. Phase Det.		6AL5	6BT	
V15	Horiz. Mult.		6SN7GT	8BD	
V16	Horiz. Output		6BQ6G	6AM	
V17	Damper		5W4GT	4CG	
V18	HV Rectifier		1B3GT	3C	
V19	LV Rectifier		5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V20	21EP4	21EP4 21EP4A ① 21FP4 ① 21FP4A ①	12D 12D 12C 12C	① Circuit changes necessary

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	SONORA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	450	N-8038	AFH2-61		UPT6450		TVL-2770	▲ Filter
B	40	450							▲ Filter
C2	4	50	N-8054	PRS150/4		BR550		TVA-1303	Horiz. Output Cathode
C3A	10	450	N-8039	AFH2-47		UPT1145		TVL-2750	■ Vert. Osc. Decoupling
B	10	450							▲ Vert. Output Decoupling
C4A	10	450	N-8040	AFH4-120		UPT426		TVL-3761	Vert. Output Decoupling
B	100	50						TVA-1310	▲ Vert. Output Cathode
C	80	200							▲ Decoupling
D	40	200							▲ Decoupling
C5	100	250	N-8037					TVL-1578	Audio Output Dec.
C6	18	50	N-6192	PRS150/16		BR1615		TVA-1409	Stabilizing Cap.
C7	3-9				829-10				Variable Trimmer
C8	2.2			TCZ-2.2			NP0K-2R2		Neutralizing Cap.
C9	800			BPD-0008	DD-801	TM5T8	801-001	5HK-D1	RF Amp. Grid Bypass
C10	.5-3				829-3				Variable Trimmer
C11	120			SI120	D6-121	TM5T12	GP1K-121	5GA-T12	RF Amp. Decoupling
C12	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C13	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C14	.5-3				829-3				Variable Trimmer
C15	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C16	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C17	.5-3				829-3				Variable Trimmer
C18	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Conv. Fil. Bypass
C19	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C20	120	500		SI120	D6-121	TM5T12	GP2K-121	5GA-T12	IF Coupling
C21	.1	200	N-1351	P288-1	DF-104	PT2P1		2TM-P1	RF Bypass
C22	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C23	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Fil. Bypass
C24	25	400	N-2578	P488-25		PTE4P25		4TM-P25	AGC Filter
C25	1000		N-6887	BPD-001	DD-102	TM5D1	801-001	5HK-D1	AGC Filter
C26	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Dec.
C27	1500		N-7371	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	1st. Video IF Cathode
C28	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Fil.
C29	100		N-6015	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C30	1000		N-6887	BPD-001	DD-102	TM5D1	801-001	5HK-D1	AGC Filter
C31A	4000		N-7774	BPD-2X004	D6-403	TM5DD4	822-004	5HK-2D4	2nd. Video IF Plate
B	4000				D6-402				2nd. Video IF Screen
C32	1500		N-7371	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	2nd. Video IF Cathode
C33	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Fil.
C34	100		N-6015	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C35	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C36A	4000		N-7774	BPD-2X004	D6-402	TM5DD4	822-004	5HK-2D4	3rd. Video IF Cathode
B	4000				D6-402				3rd. Video IF Fil.
C37	100		N-6015	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C38	100		N-6015	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C39	.25	400	N-2579	P488-25		PTE4P25		4TM-P25	AGC Filter
C40	.01	400	N-1344	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AGC Rect. Cathode
C41	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Video Det. Fil. Bypass
C42	10	500	N-7843	1488-00001	D6-100	5W5Q1	GP1K-100	MS-41	Video Det. Filter
C43	.01	400	N-1344	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Video Output Cathode †
C44	220	500	N-8016	1488-00025	D6-221	5W5T25	GP2K-221	1FM-325	Video Output Cathode
C45	47	500	N-7836	1489-00005		5R5Q5		MS-45	Contrast Cont. Shunt
C46	.1	400	N-1623	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C47	.1	400	N-1623	P488-1	DF-104	PTE4P1		4TM-P1	Acc. Anode Bypass
C48	.1	200	N-1351	P288-1	DF-104	PJ2P1		2TM-P1	RF Bypass
C49	.1	400	N-1623	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C50	220	500	N-8106	1489-00025	D6-221	5R5T25	GP2K-221	5GA-T22	Video Coupling
C51	.5	200	N-6896	P288-5		PJ2P2		2TM-P5	DC Rest. Cathode
C52	5		N-7776	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	Sound IF Coupling
C53	68		N-7844				N080-338-680		Fixed Trimmer

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	SONORA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	47	500	N-7836	1469-00005		5R5Q5		MS-45	Sound IF Grid Cap.
C55	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Plate
C56	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Screen
C57	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Decoupling
C58	.02	400	N-1376	P488-02	DF-203	PTE4S2		4TM-S2	Decoupling
C59	2200	500	N-6891	SI2200	D6-222		GP2-333-222	5HK-D22	Diode Load Cap.
C60	3900	500	N-8692	1467-004	D6-402	1DSD4	GP2-333-402	1FM-24	De-Emphasis
C61	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C62	.02	400	N-1376	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C63	.08	200	N-8092						Phono Isolation
C64	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C65	100		N-6015	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	AF Amp. Plate Bypass
C66	.02	400	N-1376	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C67	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C68	5000		N-6272	BPD-005	DD-504	TM5D5	811-005	5HK-D5	Audio Output Screen
C69	5000		N-6272	BPD-005	DD-504	TM5D5	811-005	5HK-D5	RF Bypass
C70	.05	200	N-1345	P288-05	DF-503	PJ2S5		2TM-S2	RF Bypass
C71A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		♦ N-8042	P688-005	♦ PC-100	PTE6D5	GP2-333-502	♦101C1	Vert. Integrator Net.
C	.006			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C72	4700	500	N-6893	1464-005		1DR5D5		MS-25	Vert. Osc. Grid Cap.
C73	.1	400	N-1623	P488-1		PTE4P1		4TM-P1	Vert. Discharge
C74	.25	400	N-2579	P488-25		PTE4P25		4TM-P25	Vert. Sweep Coupling
C75	.02	600	N-1376	P688-02	DF-203	PTE6S2		6TM-S2	Vert. Sweep Coupling
C76	.05	200	N-1345	P288-05	DF-503	PJ2S5		2TM-S5	Integrator Net.
C77	1000	500	N-7783						Horiz. Sync Coupling
C78	1100	500	N-7783						Horiz. Sync Coupling
C79	.1	200	N-1351	P288-1	DF-104	PJ2P1		2TM-P1	Voltage Divider
C80	.05	800	N-8106	P1088-05		PTS1S5		MS-55	Horiz. Feedback
C81	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. AFC Coupling
C82	.1	200	N-1351	P288-1	DF-104	PJ2P1		2TM-P1	Horiz. AFC Filter
C83	3900	500	N-7373	1464-004		1DR5D4			Fixed Trimmer
C84	330	500	N-7777	1469-00035					Horiz. Discharge
C85	390	500	N-6890	1469-0004		5R5T4		MS-34	Horiz. Discharge
C86	270	500	N-8074	1469-0003	D6-271	5R5T3	GP2K-271	MS-33	Horiz. Sweep Coupling
C87	.25	400	N-2579	P488-25		PTE4P25		4TM-P25	Horiz. Output Screen
C88	.5	200	N-6896	P288-5		PJ2P2		2TM-P5	Horiz. Sweep Coupling
C89	.25	800	N-6895	684-25		PTE8P25		6TM-P25	RF Bypass
C90	1500	500	N-8073	1464-0015		1R5D15			Fixed Trimmer
C91	.05	800	N-8105	P1088-05		PTS1S5		MS-55	Damper Filter
C92	500	20000	N-8041	HV20C	TV3-502	MM-C20T5			HV Filter
C93	5000		N-6272	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C94	.01	600	N-6979	689ZGXY-01		PJ6S1		6TM-S1	Line Filter
C95	.01	600	N-6979	689ZGXY-01		PJ6S1		6TM-S1	Line Filter

† Some models use 05MFD in this application (Part #N-1346)
♦ Items C71A, C71B, C71C, R79A, R79B, R79C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	SONORA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2500Ω	½	N-8158	QJ-23*	RTV-342	SBBT-707-S	Contrast - Tapped @ 500Ω - Panel
B	500KΩ	½					Volume & SW - Rear
R2A	50KΩ	½	N-8280	QU1-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	50KΩ	½	N-8280	QU1-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	1MEg	½	N-8279	QU1-137	AG-61-S	AN-69	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK4	Attach to R4A per instructions
R5A	2.5Meg	½	N-7341	QU1-239	AG-84-S	AN-83	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	3000Ω	½	N-8071	QU1-112	AG-15-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions

*CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-111X & P1-200 (Panel) B13-133 & R2-212 (Rear) & SWITCH 76-1.

THIS MODEL IS SUPPLIED WITH TWO DIFFERENT ARRANGEMENTS OF FRONT PANEL CONTROLS: ONE ARRANGEMENT IS SHOWN ABOVE, WHILE THE SECOND COMBINATION IS AS FOLLOWS: (R1A) and (R2A) ARE COMBINED IN A DUAL CONCENTRIC CONTROL PART NO. N-8053, (R3A) AND (R4A) ARE COMBINED IN A DUAL CONCENTRIC CONTROL PART NO. N-7338, AND (R1B) IS SUPPLIED AS A SINGLE UNIT WITH SWITCH PART NO. N-7172, THE RESISTANCE VALUE OF EACH CONTROL REMAINS THE SAME.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	SONORA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ±10% UNLESS OTHERWISE NOTED
R7	22KΩ 20%	½			Antenna Coil Shunt
R8	47KΩ 20%	½			1st. RF Amp. Grid
R9	220KΩ 20%	½			2nd. RF Amp. Grid
R10	220KΩ 20%	½			Voltage Divider - See Note 1
R11	1000Ω 20%	½		BTS-1000	RF Amp. Dec.
R12	4700Ω	½		BTS-4700	Mixer Grid
R13	220KΩ 20%	½			Mixer Grid
R14	15KΩ 20%	½			Mixer Plate
R15	10Ω 20%	½			Parasitic Suppressor
R16	10KΩ	½			Oscillator Grid
R17	10KΩ	½			Oscillator Plate
R18	4700Ω 20%	½	N-7000	BTS-4700	AGC Network
R19	820KΩ	½	N-2976	BTS-820K	AGC Network
R20	100Ω 20%	½	N-1349	BTS-100	Decoupling
R21	18Ω	½			Parasitic Suppressor
R22	1000Ω	½	N-1894	BTS-1000	AGC Network
R23	6800Ω	½	N-4630	BTS-6800	1st. Video IF Grid
R24	47Ω	½	N-6237		1st. Video IF Cathode
R25	82Ω	½	N-5857	BTS-82	1st. Video IF Cathode
R26	1000Ω	½	N-1694	BTS-1000	1st. Video IF Dec.
R27	1000Ω	½	N-1694	BTS-1000	AGC Network
R28	15KΩ	½	N-6424	BTS-15K	2nd. Video IF Grid
R29	47Ω	½	N-6237		2nd. Video IF Cathode
R30	82Ω	½	N-5857	BTS-82	2nd. Video IF Cathode
R31	1000Ω	½	N-1694	BTS-1000	2nd. Video IF Screen
R32	13KΩ	½	N-8036	1 3/4A-13K	2nd. Video IF Plate Dec. - Wire Wound

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	SONORA PART No.	IRC PART No.	IDENTIFICATION CODES
R33	15KΩ	2	N-2970	BTB-15K	Voltage Divider
R34	47KΩ	2	N-8033	BTB-47K	Voltage Divider
R35	6800Ω	½	N-4630	BTB-6800	3rd. Video IF Coil Shunt
R36	150Ω	½	N-3663	BTS-150	3rd. Video IF Cathode
R37	560Ω	½	N-4280	BTS-560	3rd. Video IF Dec.
R38	820KΩ	½	N-2976	BTS-820K	AGC Network
R39	68KΩ	½	N-4120	BTS-68K	AGC Network
R40	150KΩ	½	N-7003	BTS-150K	AGC Network
R41	150KΩ	½	N-7003	BTS-150K	Voltage Divider
R42	6800Ω	½	N-4630	BTS-6800	Video Det. Diode Load
R43	1.5Meg	½		BTS-1.5Meg	Bias Network
R44	100Ω 30%	½	N-1349		Parasitic Suppressor
R45	180Ω	½	N-4067	BTS-180	Contrast Control Shunt
R46	1500Ω 20%	½	N-7398	BTS-1500	Contrast Control Shunt
R47	2.7Meg	½		BTS-2.7Meg	Video Amp. Grid
R48	47Ω	½	N-6237		Video Amp. Cathode
R49	15KΩ	2	N-2970	BTB-15K	Video Amp. Plate
R50	33KΩ	1	N-8044	BTA-33K	Video Amp. Plate
R51	4700Ω	1	N-7154	BTA-4700	Video Amp. Plate Dec.
R52	18KΩ	2	N-8031	BTB-18K	Voltage Divider
R53	2200Ω	½	N-4896	BTS-2200	Isolation
R54	180KΩ	1		BTA-180K	Voltage Divider
R55	6800Ω	½	N-4630	BTS-6800	Voltage Divider
R56	68KΩ 20%	½	N-4120	BTS-68K	Picture Tube Cathode
R57	47KΩ	½		BTS-47K	Picture Tube Grid
R58	100KΩ 20%	½	N-2973	BTS-100K	Acc. Anode Load
R59	150KΩ	½	N-7003	BTS-150K	Sound IF Grid
R60	8200Ω	1	N-8034	BTA-8200	Sound IF Screen
R61	1000Ω	½	N-1694	BTS-1000	Sound IF Dec.
R62	27KΩ	1	N-7012	BTA-27K	Voltage Divider
R63	560Ω	½	N-4280	BTS-560	Balancing
R64	15KΩ	½	N-6424	BTS-15K	De-emphasis
R65	270Ω	½	N-4121	BTS-270	Balancing
R66	12KΩ	½	N-5690	BTS-12K	Ratio Det. Diode Load
R67	6.8Meg	½		BTS-6.8Meg	AF Amp. Grid
R68	220KΩ	½	N-8025	BTS-220K	AF Amp. Plate
R69	300KΩ 5%	½	N-8026		Voltage Divider
R70	180KΩ	½	N-4899	BTS-180K	Voltage Divider
R71	100KΩ	½	N-4468	BTS-100K	AF Output Grid
R72	560KΩ	½	N-7403	BTS-560K	Isolation
R73	560KΩ	½	N-7403	BTS-560K	Sync Sep. Grid
R74	22KΩ	½	N-6012	BTS-22K	Sync Sep. Cathode
R75	1Meg	½	N-4470	BTS-1Meg	Sync Sep. Plate
R76	2200Ω	½	N-4896	BTS-2200	Sync Phase Inverter Cathode
R77	1500Ω	½	N-7398	BTS-1500	Sync Phase Inverter Plate
R78	2700Ω	1		BTA-2700	Sync Phase Inverter Plate
R79A	22KΩ	½		BTS-22K	Int. Network
B	8200Ω	½	♦ N-8042	BTS-8200	Int. Network
C	8200Ω	½		BTS-8200	Int. Network
R80	1.2Meg	½	N-4424	BTS-1.2Meg	Vert. Osc. Grid
R81	15KΩ	½	N-6424	BTS-15K	Vert. Osc. Grid
R82	1Meg	½	N-4470	BTS-1Meg	Vert. Osc. Plate
R83	56KΩ	½	N-4823	BTS-56K	Vert. Osc. Plate Dec.
R84	2700Ω	1		BTA-2700	Vert. Peaking
R85	2.2Meg	½	N-4061	BTS-2.2Meg	Vert. Output Grid
R86	820Ω	1		BTA-820	Vert. Output Cathode
R87	5300Ω	4	N-8287	1 3/4A-5000	Vert. Output Dec. - Wire Wound
R88	18KΩ 20%	½		BTS-18K	Voltage Divider - See Note 2
R89	100KΩ	½	N-2973	BTS-100K	Horiz. AFC Diode Load
R90	100KΩ	½	N-2973	BTS-100K	Horiz. AFC Diode Load
R91	4.7Meg 20%	½	N-4028	BTS-4.7Meg	Horiz. AFC Diode Load
R92	56Ω	1	N-8155		Horiz. AFC Feedback
R93	470KΩ	½	N-8029	BTS-470	Horiz. AFC Filter
R94	1200Ω	1	N-6793	BTS-1200	Horiz. MV Cathode
R95	5600Ω	1	N-7406	BTS-5600	Horiz. MV Plate
R96	100KΩ 5%	½		BTS-100K - 5%	Horiz. MV Grid
R97	100KΩ	½	N-4468	BTS-100K	Horiz. MV Grid
R98	180KΩ	½	N-4899	BTS-180K	Horiz. MV Plate
R99	4700Ω	½	N-7009	BTS-4700	Horiz. Peaking
R100	100Ω 20%	½	N-1349		Parasitic Suppressor
R101	470KΩ	½	N-8029	BTS-470K	Horiz. Output Grid
R102	100Ω	2	N-8030		Horiz. Output Cathode
R103	33KΩ	2	N-8032	BTB-33K	Horiz. Output Screen
R104	10KΩ	2	N-4229	BTB-10K	Decoupling
R105	4.3Ω	½	N-8126		H.V. Rect. Filament
R106	470KΩ	1			H.V. Filter

Note 1. Some Models may use a 180KΩ Resistor in this application
Note 2. Some Models may use a 10KΩ Resistor in this application
♦ Items C71A, C71B, C71C, R79A, R79B & R79C are combined in one unit

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: GUAM PART No.	NOTES
SP1A	P.M.	3.2Ω	N-8055	ST-115 Mod. PV-8	8A21	
	CONE DIA.	V. C. DIA.				
SP1B	8"	9/16"				

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @1.8A	660VCT † @.220 ADC	5VAC @3A	6.3VAC @6.3A SEC. #4 6.3VAC @2.5A	N-8069		P-3070	

SONORA
MODELS 350, 351

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA SONORA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	170Ω	16KΩ	N-7764	A-8125 ①	A-3000 ①	TB0-2	Vert. Osc. Trans.
T3	270Ω tap ⓐ 20Ω	9Ω tap ⓐ 6Ω	N-8104	A-8130	HV0-7 ①		Horiz. Output Trans.
T4	1300Ω tap ⓐ 12Ω		N-7717	A-8123	A-3037	TS0-8	Vert. Output Trans.
T5A	9Ω		N-8057	DY-8	MDF-70		Horiz. Deflection Coils
B	53Ω						Vert. Deflection Coils

① Drill one new Mtg. Hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA SONORA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	5KΩ	3.2Ω	395Ω	.7Ω	Part of Speaker	A-3877	A-2930	R0-9 ①	① Drill one new mtg. hole

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ↜)	REPLACEMENT DATA SONORA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.220A	65Ω	2.3Henries	N-8064	C-2325 ①	C-2996 ①	TR-3300	① Drill one new mounting hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SONORA PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	Ant. Coil	0Ω					
L3	RF Choke	0Ω					
L4	Fil. Choke	0Ω					
L5	RF, Mixer Grid & Osc. Coils	0Ω					
L6	Fil. Choke	0Ω					
L7	1st. Video IF	1Ω					
L8	2nd. Video IF	.2Ω		N-7745	TV-102		
L9	RF Choke	8.2Ω		N-7321		CL-1	10 Microhenries
L10	3rd. Video IF	.2Ω		N-7745	TV-103		
L11	RF Choke	8.2Ω		N-7321		CL-1	10 Microhenries
L12	4th. Video IF	.2Ω		N-7745	TV-102		
L13	Peaking Coil	10Ω		N-8060	*TV-184		174 Microhenries wound on 18KΩ resistor
L14	Peaking Coil	24Ω		N-8059			933 Microhenries
L15	Peaking Coil	10.6Ω		N-8061			217 Microhenries wound on 22KΩ resistor
L16	Peaking Coil	18.3Ω		N-8062			578 Microhenries wound on 5.6KΩ resistor
L17	Sound IF	1.2Ω		N-7746	TV-151		
L18	Ratio Det.	3.4Ω	.2Ω	N-7744			Tertiary Winding .2Ω
L19	Horiz. Osc.	70Ω		N-7748	TV-163		
L20	Width Coil	21Ω		N-8134			
L21	Horiz. Lin.	35Ω		N-8063	MWC-1		

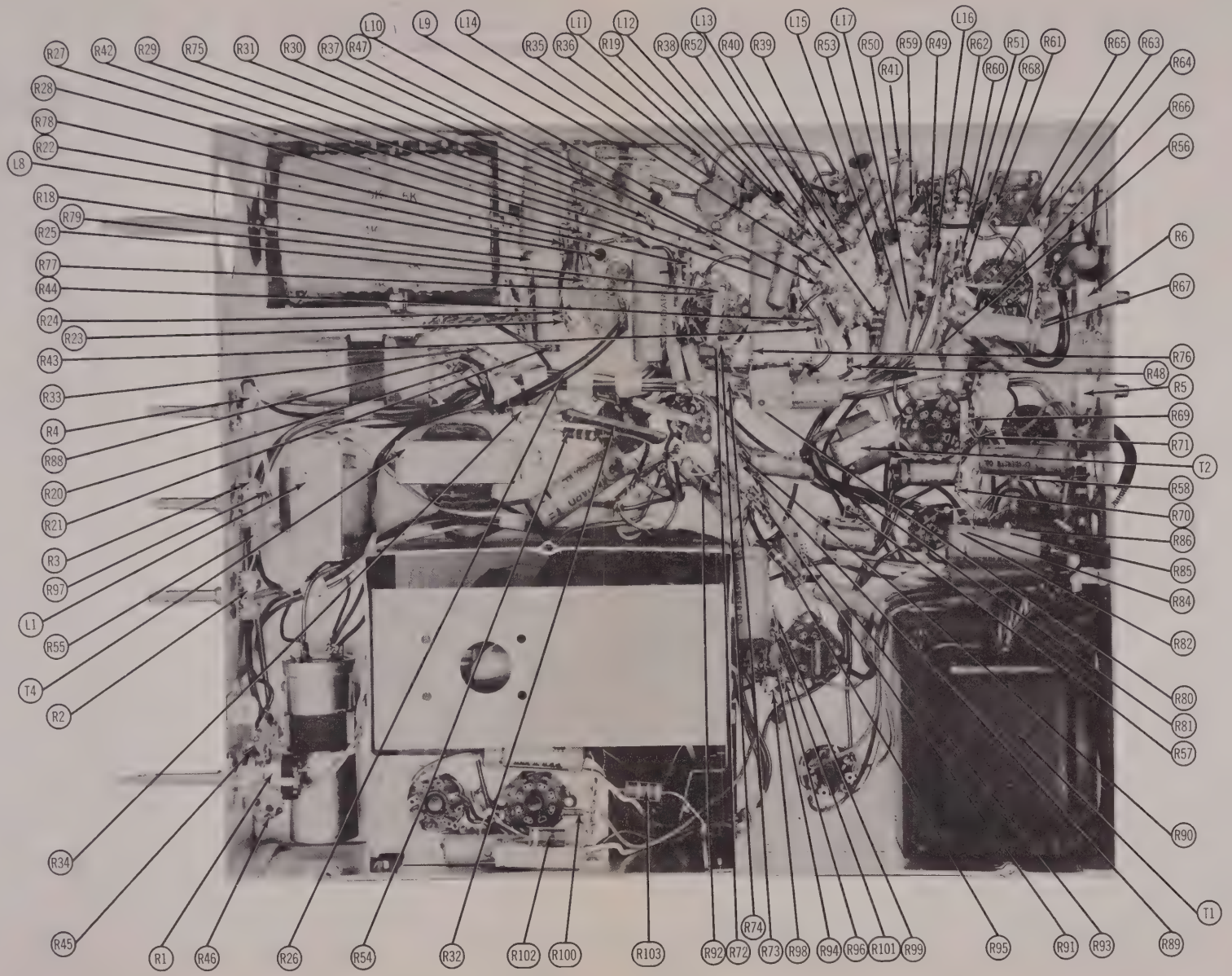
*Parallel with 18KΩ resistor

FUSES

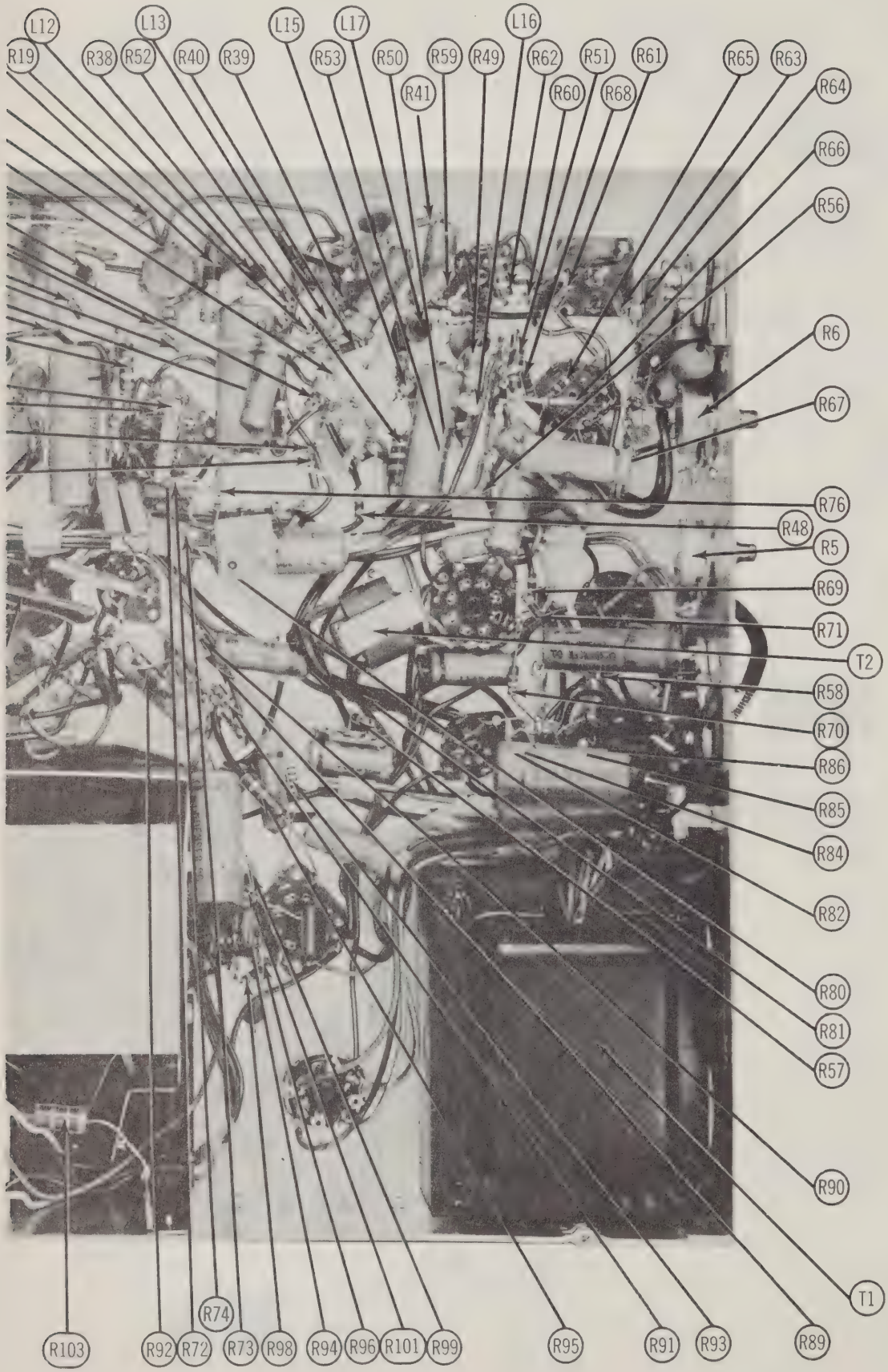
ITEM No.	TYPE	RATING	REPLACEMENT DATA SONORA PART No. FUSE	SONORA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG Pigtail	1/4A. 250V			318.250		GJV-1/4	

MISCELLANEOUS

ITEM No.	PART NAME	SONORA PART No.	NOTES
M2	RF Tuner		
M3	Switch	N-8099	
M4	Focus Magnet	N-8067	
M5	Ion Trap	N-8272	
B2	Trimmer	N-7375	20-270MMF Horiz. Drive



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

TRAD MODELS C-2020, C-2420, CD-2020, T-1720

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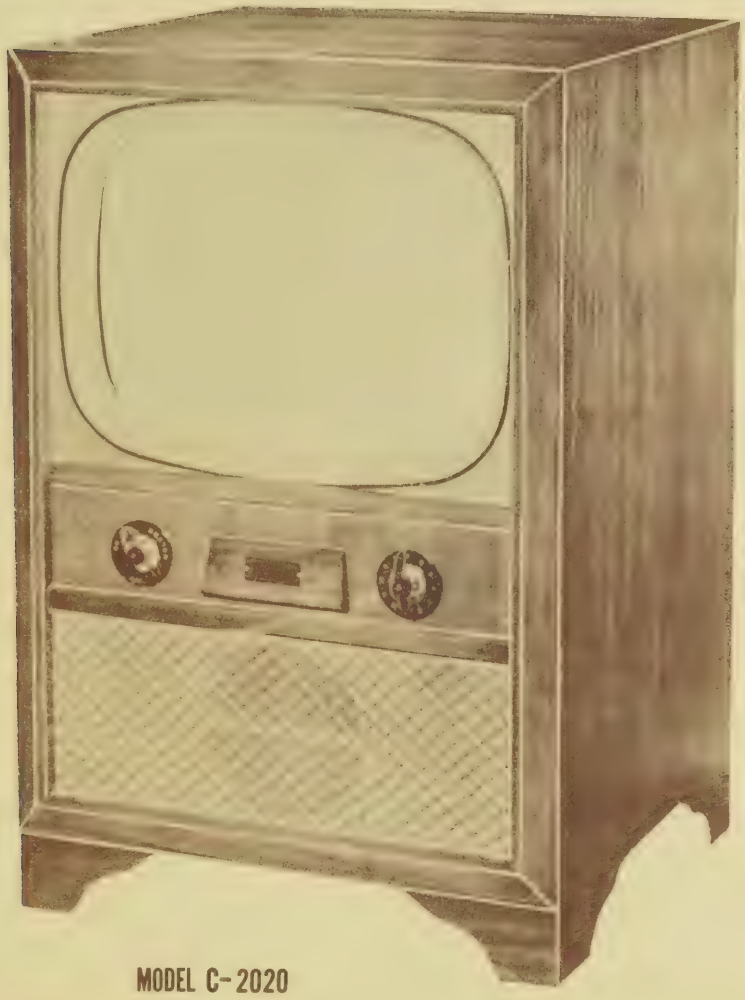

MODEL C-2020

TRAD MODELS C-2020, C-2420, CD-2020, T-1720

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*TRADE MARK

TRAD MODELS C-2020, C-2420, CD-2020, T-1720

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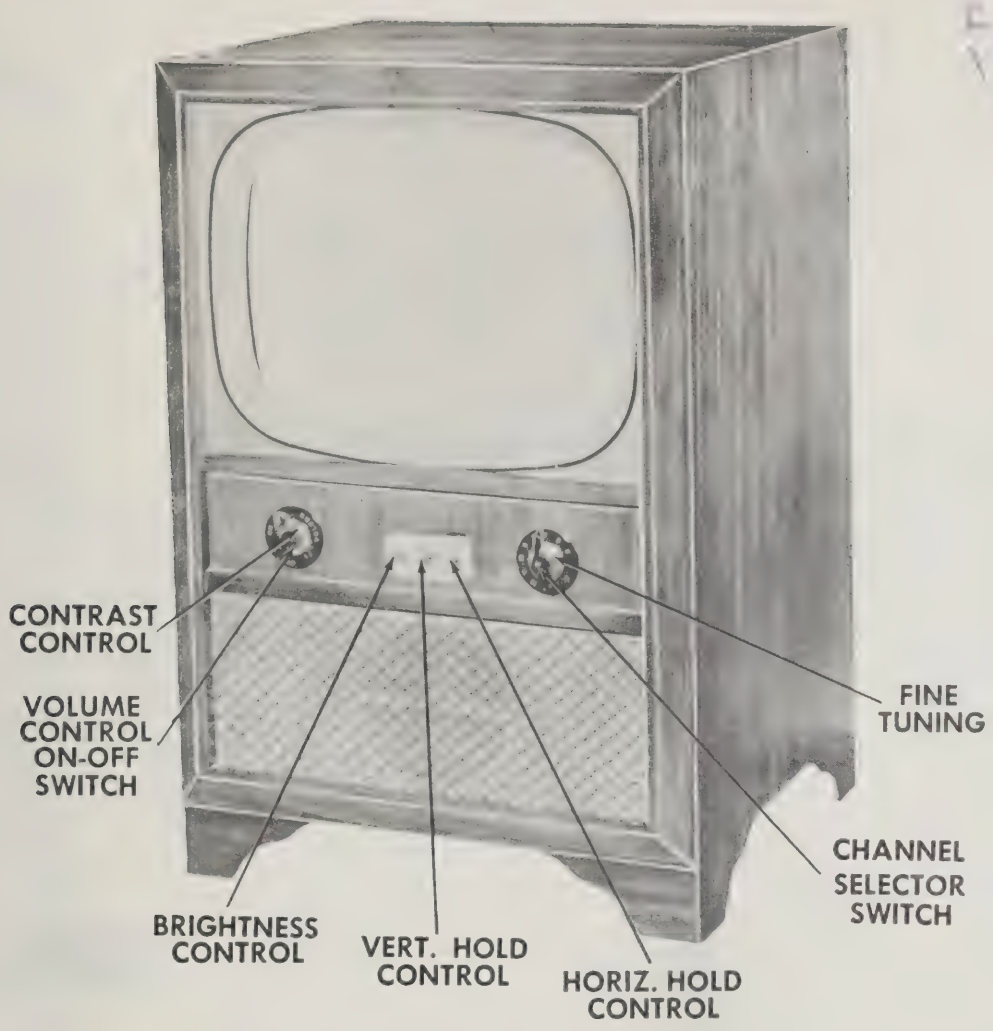

Trad C-2020

TRADE NAME	Trad Models C-2020, C-2420, CD-2020, T-1720
MANUFACTURER	Trad Television Corp., 1001 First Ave., Ashbury Park, New Jersey
TYPE SET	Television Receiver
TUBES	Twenty one
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.24 Amp. @117 Volts AC
TUNING RANGE	Channels 2 thru 13

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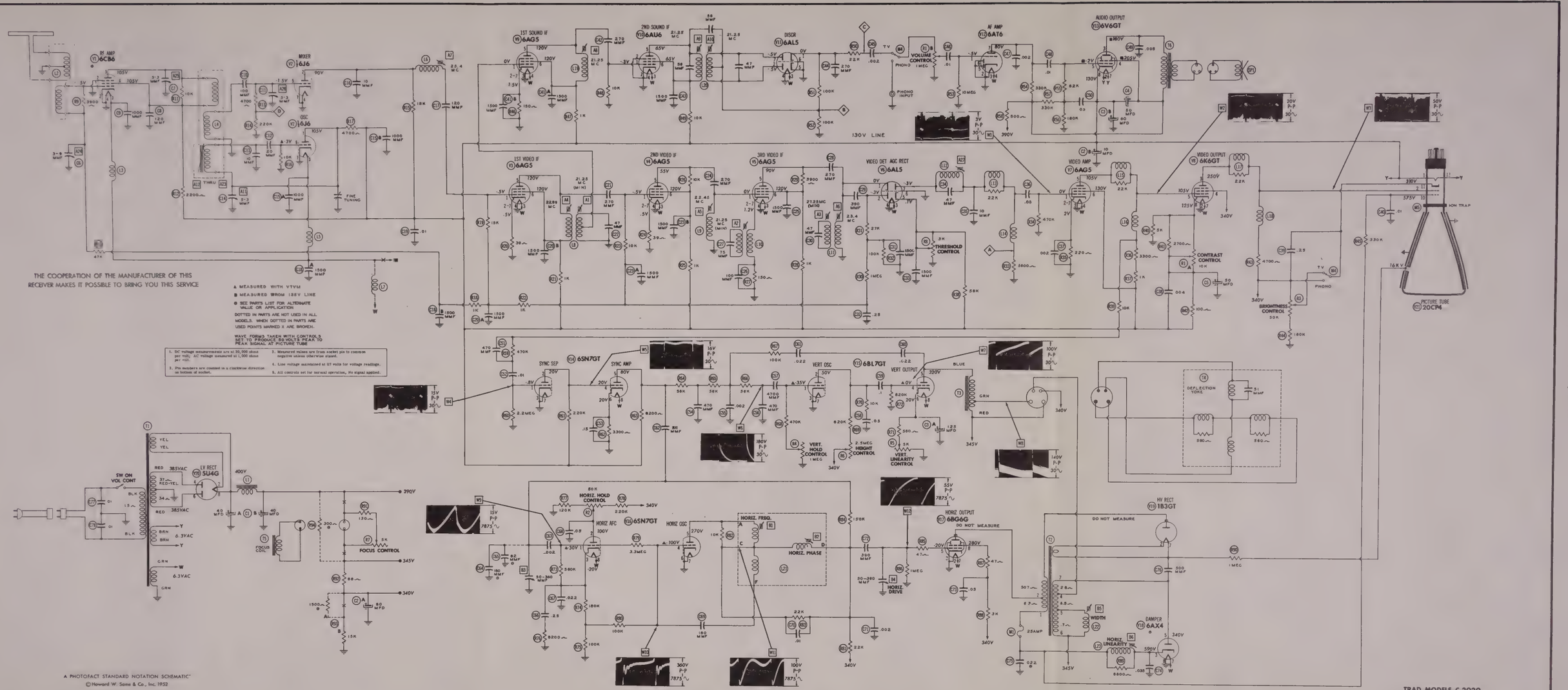
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
▲ MEASURED WITH VTVM
■ MEASURED FROM 125V LINE
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET TO CORRESPOND WITH CHART TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 30,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Measured values are from socket pin to common negative unless otherwise stated.
3. Pin numbers are counted in a clockwise direction as bottom of socket.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.
RF AMP V1 6CB6
MIXER V7 6J6
OSC V7 6J6
1ST SOUND IF V9 6AG5
2ND SOUND IF V10 6AU6
DISCR V11 6AL5
AF AMP V12 6A T6
AUDIO OUTPUT V13 6V6GT
VOLUME CONTROL 1 MEG
PHONO INPUT
130V LINE
1ST VIDEO IF V3 6AG5
2ND VIDEO IF V4 6AG5
3RD VIDEO IF V5 6AG5
VIDEO DET AGC RECT V5 6AL5
THRESHOLD CONTROL
VIDEO AMP V7 6AG5
VIDEO OUTPUT V8 6K6GT
CONTRAST CONTROL 10K
BRIGHTNESS CONTROL 50K
PICTURE TUBE T1 20CP4
ION TRAP
PHONO
SYNC SEP
SYNC AMP V14 6SN7GT
VERT OSC
VERT OUTPUT V16 6BL7GT
VERT. HOLD CONTROL 1 MEG
HEIGHT CONTROL 2.5 MEG
VERT. LINEARITY CONTROL 5K
DEFLECTION YOKE
SW ON VOL CONT
LV RECT V20 5U4G
FOCUS COIL
FOCUS CONTROL 5K
HORIZ. HOLD CONTROL 50K
HORIZ AFC
HORIZ OSC V15 6SN7GT
HORIZ. FREQ.
HORIZ. PHASE
HORIZ. DRIVE 50K
HORIZ OUTPUT V17 6BG6G
DO NOT MEASURE
HV RECT V19 1B3GT
WIDTH
HORIZ. LINEARITY
DAMPER V18 6AX4
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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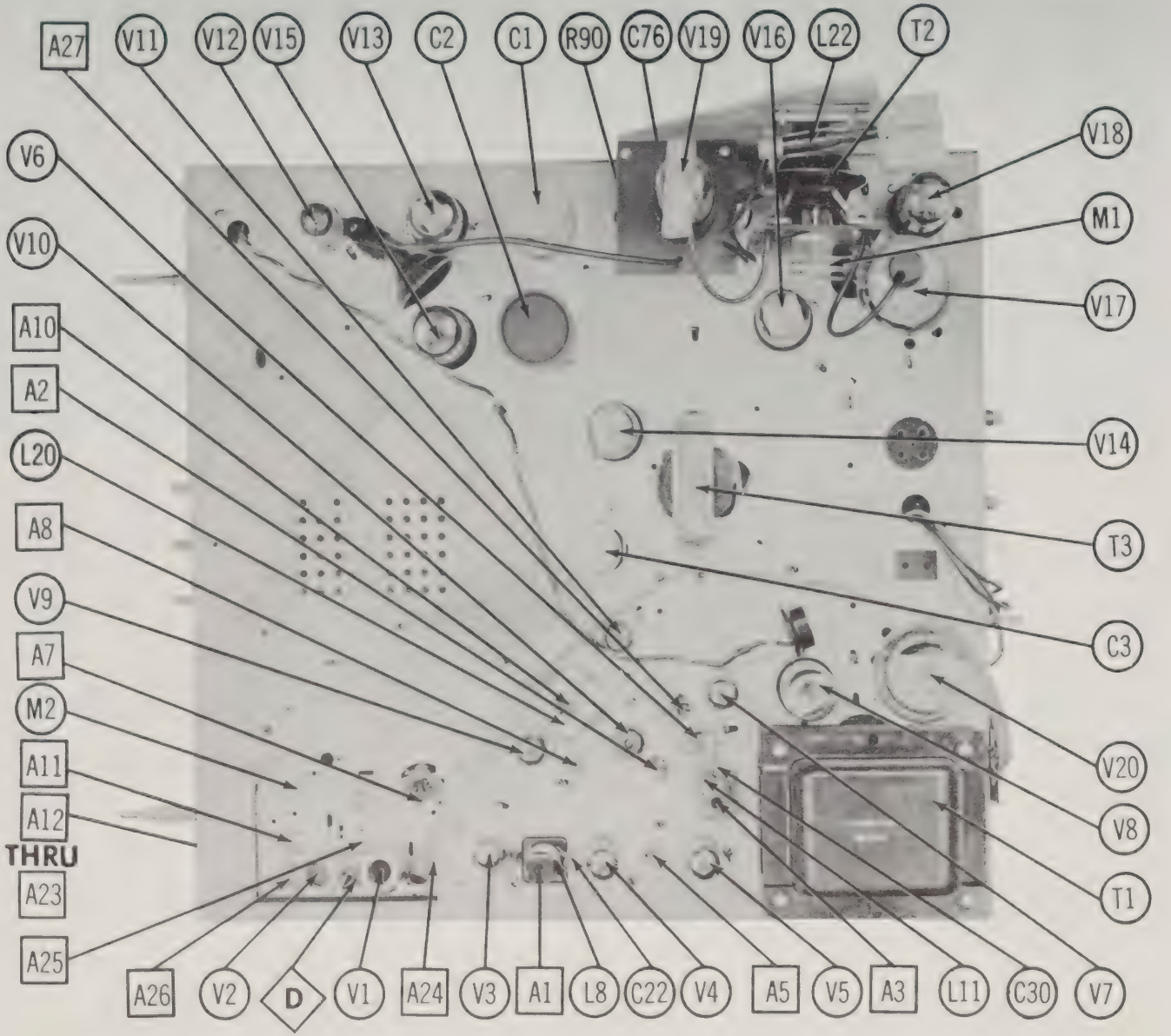
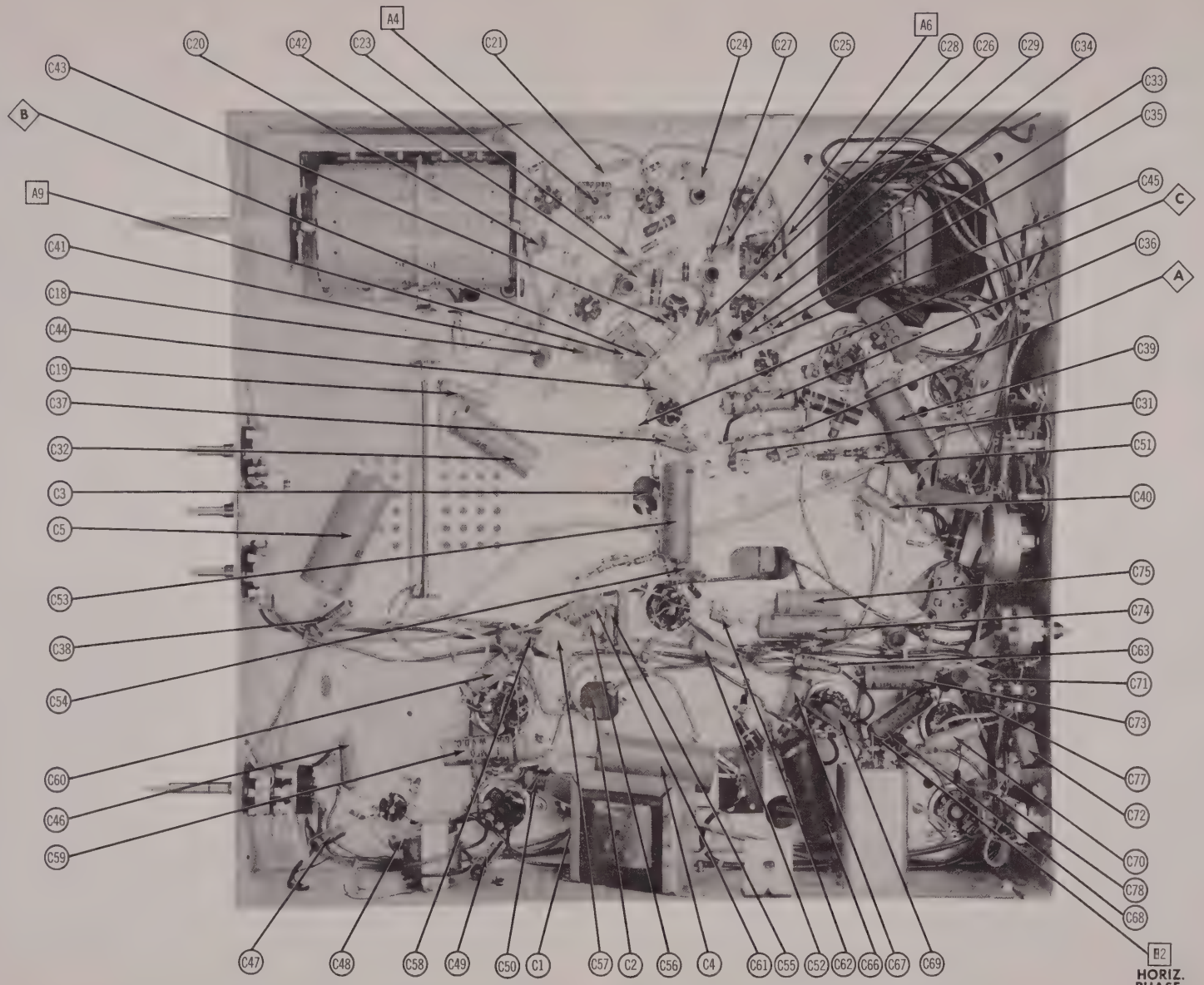
TRAD MODELS C-2020, C-2420, CD-2020, T-1720

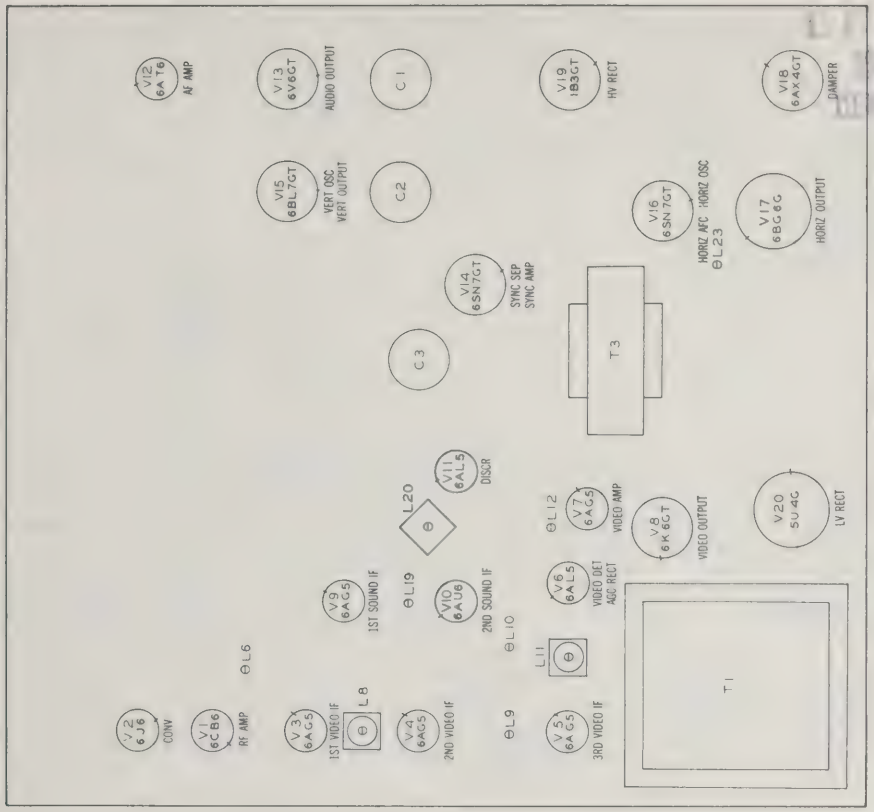
TRAD MODELS C-2020, C-2420, CD-2020, T-1720



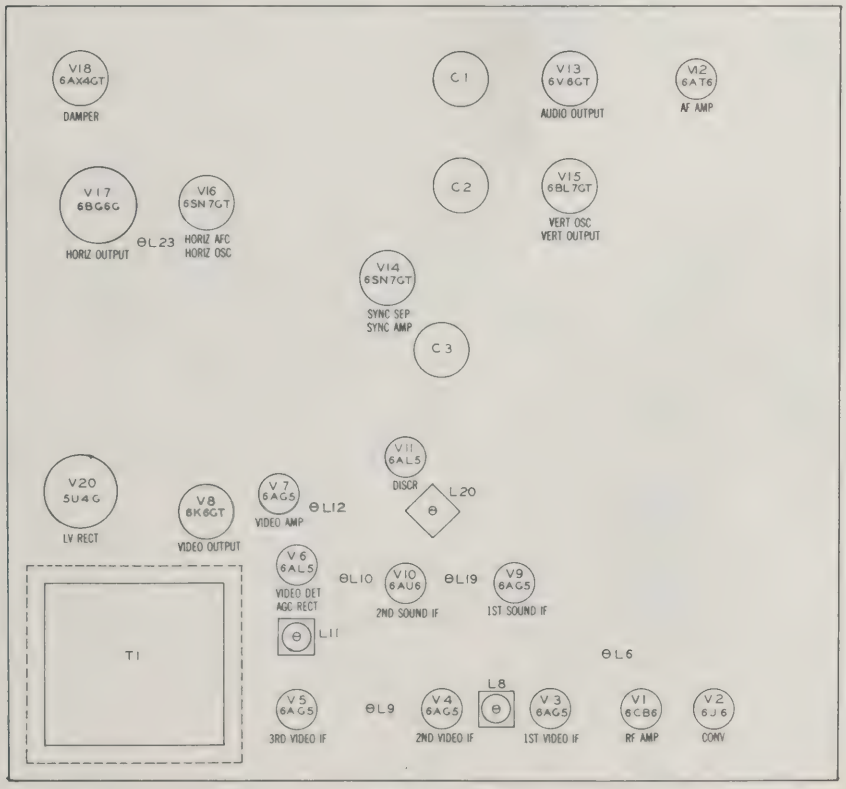
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.25MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	27.25MC	"	"	A3	"
3.	"	"	22.69MC	"	"	A4	Adjust for maximum deflection. Attenuate signal generator output to maintain approximately 2 volt reading.
4.	"	"	22.45MC	"	"	A5	"
5.	"	"	23.4MC	"	"	A6	"
6.	"	"	25.4MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 3 volt battery to the ungrounded side of C32. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	23.0MC 25.75MC	Any	Vert. Amp. to point (A). Low side to chassis.	A4, A6, A7	Check for response curve similar to fig. 1. Adjust A7 for proper placement of 25.75MC marker. Retouch A4 for placement of 23.0MC marker. Retouch A6 for flat top on response curve. Remove bias battery.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.25MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A8, A9	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to Point (C). Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450 KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.25MC (450 KC Swp)	21.25MC	Any	Vert. amp. to point (B). Low side to chassis.	A8, A9	Adjust for maximum amplitude and symmetry as per fig. 2.
9.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A10	Adjust A10 so 21.25MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of cross over lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A11. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A11 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10	Direct	High side to either antenna terminal. Low side to chassis.	215.75MC (unmod.)	13	DC probe to Point (C). Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A13	
			203.75MC	11		A14	
			197.75MC	10		A15	
			191.75MC	9		A16	
			185.75MC	8		A17	
			179.75MC	7		A18	
			87.75MC	6		A19	
			81.75MC	5		A20	
			71.75MC	4		A21	
			65.75MC	3		A22	
			59.75MC	2		A23	

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

Reconnect the negative lead of the 3 volt battery to the ungrounded side of C32.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point (D) Low side to chassis.	A24, A25 A26	Adjust for response curve similar to fig. 4 with markers above 90%.
12.	"	"	213MC (10 MC Swp)	211.25MC 215.75MC	13	"		Check all channels for response curve similar to fig. 4. If markers fall below 70% on any channel make slight adjustment of A24, A25 and A26 with channel switch set for that channel. Recheck all channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75.MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

4.5MC TRAP ADJUSTMENT

With alignment completed and the receiver operating, connect a short across the trap winding of L8. Tune in a strong TV station and examine the picture for evidence of 4.5MC beat interference. If interference is present adjust A27 to minimize that interference. Remove the short from L8.

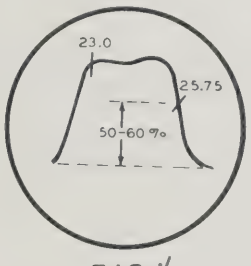


FIG. 1

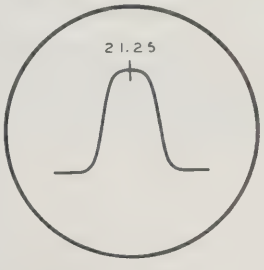


FIG. 2

FIG. 3

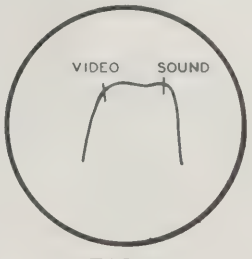


FIG. 4

RESISTANCE MEASUREMENTS

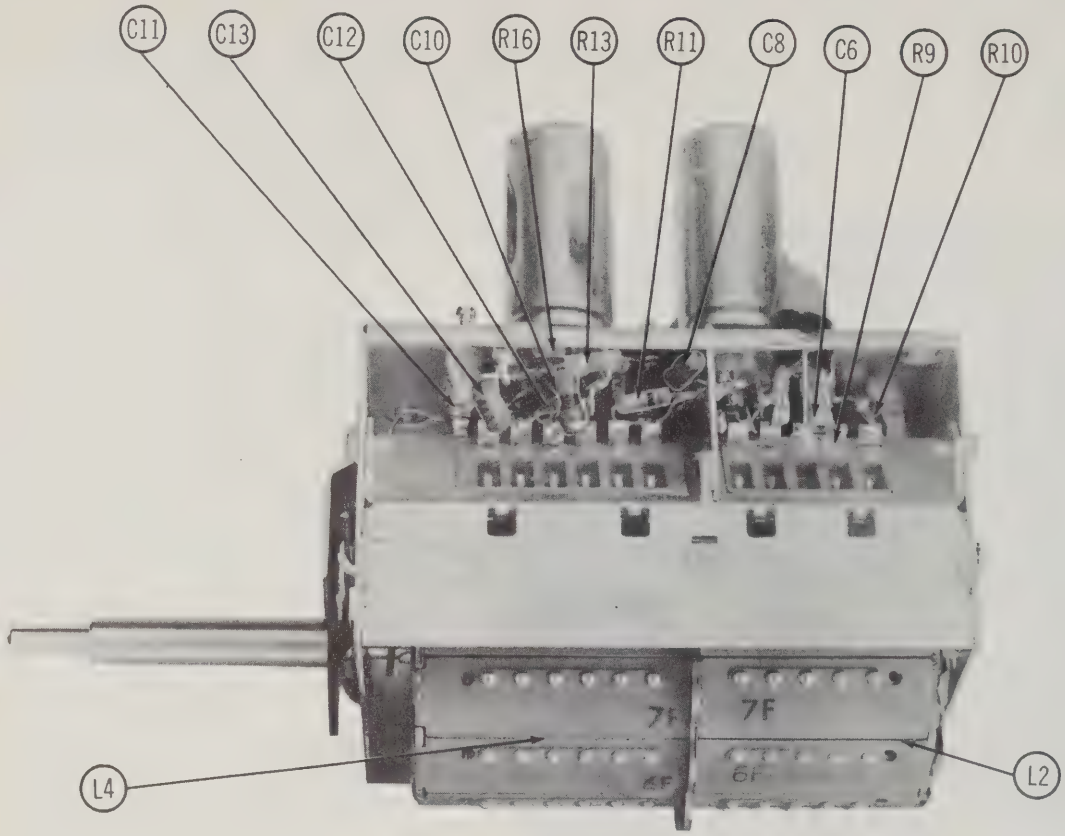
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.1Meg	0Ω	.1Ω	0Ω	■2.2KΩ	■2.2KΩ	0Ω		
V 2	6J6	■4.7KΩ	■15KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6AG5	1.1Meg	39Ω	.1Ω	0Ω	■1KΩ	■1KΩ	39Ω		
V 4	6AG5	1.1Meg	39Ω	.1Ω	0Ω	■11KΩ	■1KΩ	39Ω		
V 5	6AG5	.3Ω	150Ω	.1Ω	0Ω	■4.9KΩ	■1KΩ	150Ω		
V 6	6AL5	.2Ω	127KΩ	.1Ω	0Ω	550Ω	0Ω	5.6KΩ		
V 7	6AG5	470KΩ	220Ω	0Ω	.1Ω	■4.3KΩ	■0Ω	220Ω		
V 8	6K6GT	†5KΩ	0Ω	†5KΩ	†320Ω	■4.3KΩ	†5KΩ	.1Ω	■600Ω	
V 9	6AG5	0Ω	150Ω	0Ω	.1Ω	■1KΩ	■1KΩ	150Ω		
V 10	6AU6	10KΩ	0Ω	.1Ω	0Ω	■10KΩ	■10KΩ	0Ω		
V 11	6AL5	200KΩ	100KΩ	.1Ω	0Ω	0Ω	0Ω	100KΩ		
V 12	6AT6	10Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 13	6V6GT	INF	■.1Ω	†850Ω	†550Ω	200KΩ	INF	■0Ω	5KΩ	
V 14	6SN7GT	2.2Meg	■220KΩ	0Ω	■220KΩ	■8.2KΩ	3.3KΩ	0Ω	.1Ω	
V 15	6BL7GT	1.2Meg	†2.3Meg	0Ω	820KΩ	†1.5KΩ	1.4KΩ	0Ω	.1Ω	
V 16	6SN7GT	700KΩ	100KΩ	280KΩ	200KΩ	†22KΩ	0Ω	0Ω	.1Ω	
V 17	6BG6G	†3.3KΩ	0Ω	0Ω	INF	1Meg	INF	.1Ω	†3.3KΩ	TOP CAP #99Ω
V 18	6AX4GT	INF	INF	INF	INF	†326Ω	INF	.1Ω	0Ω	
V 19	1B3GT	PINS 1 THRU 8 HAVE INF RESISTANCE								TOP CAP #606Ω
V 20	5U4G	INF	13KΩ	INF	37Ω	INF	34Ω	INF	13KΩ	
V 21	20CP4	■0Ω	†5KΩ	PIN 10 #330KΩ	PIN 11 †24KΩ	PIN 12 ■.1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V20
# MEASURED FROM PIN 3 OF V18
■ MEASURED FROM 130VDC LINE

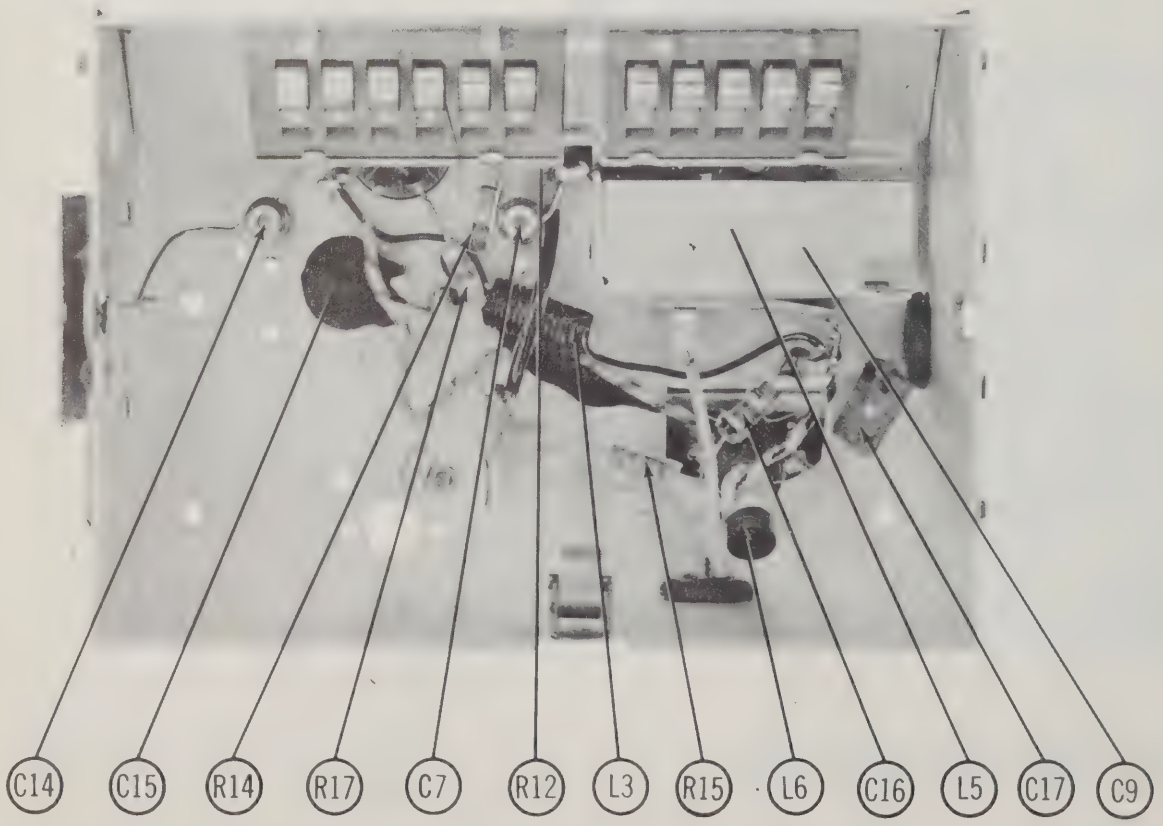
DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 5 wood and 2 metal screws. Remove rear cover.
3. Disconnect built-in Antenna and Speaker.
4. Remove 2 nuts holding Speaker. Remove Speaker.
5. Remove 3 Chassis Bolts. Remove Chassis.

NOTE. For Picture Tube Removal it is necessary to remove chassis as outlined above.

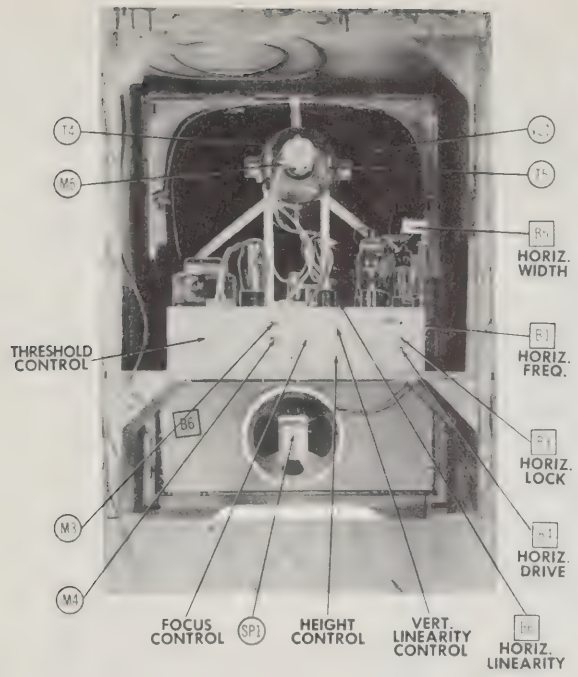


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR CHECK

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control fully clockwise. The picture should remain in sync. Momentarily interrupt the signal by switching to another channel and back again. The picture should pull into sync.

Turn the horizontal hold control fully counter clockwise.

Momentarily interrupt the signal by switching to another channel and back. The picture should be out of sync with approximately 10 sloping bars appearing.

If the receiver passes the above check, no oscillator alignment is required, if not, continue with horizontal oscillator alignment.

HORIZONTAL OSCILLATOR ALIGNMENT

Pre-set adjustments as follows :

Horizontal drive trimmer (B4) approximately 1/4 turn from fully clockwise.

Horizontal lock trimmer (B3) approximately 1/2 turn from fully clockwise.

Horizontal frequency slug (B1) so that 3/4 inch of screw extend from coil form.

Horizontal hold control at mid-position of its range.

Adjust the horizontal phase slug (B2) to sync the picture horizontally .

Turn the horizontal hold control fully counter-clockwise and switch to another channel and back again. Approximately 10 sloping bars should appear.

With the horizontal hold control at mid range, momentarily switch to another channel and back again. The picture should return to sync.

Failure to return to sync on the last 50% clockwise rotation of the horizontal hold when the signal is interruped momentarily indicates insufficient "sync lock".

To correct this condition adjust B3 counter-clockwise.

If the picture "jumps" when the horizontal hold is turned clockwise too much "sync lock" is indicated. To correct this condition adjust B3 clockwise.

Adjust the width slug (B5) so that the screw extends approximately 1 inch above the coil dome.

Adjust B4 to the point where compression of the center of the picture just begins to appear, then reverse the adjustment a slight amount.

Adjust the linearity slug (B6) for a symmetrical picture from left to right.

AGC THRESHOLD CONTROL ADJUSTMENT

The correct setting of the threshold control will be determined by the signal strength in the area where the set is to operate.

The control should be adjusted for maximum sensitivity without overloading when the contrast control is at maximum.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CH	
B	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6AG5	6AG5	7BD	
V4	2nd. Video IF Amp.	6AG5	6AG5	7BD	
V5	3rd. Video IF Amp.	6AG5	6AG5	7BD	
V6	Video Detector - AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Amplifier	6AG5	6AG5	7BD	
V8	Video Output	6K6GT	6K6GT	7AC	
V9	1st. Sound IF Amp.	6AG5	6AG5	7BD	
V10	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V11	Discriminator	6AL5	6AL5	6BT	
V12	AF Amplifier	6AT6	6AT6	7BT	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Sync Separator - Sync Amplifier	6SN7GT	6SN7GT	8BD	
V15	Vert. Oscillator - Vert. Output	6BL7GT	6BL7GT	8BD	
V16	Horiz. AFC - Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BG6G	6BG6G	5BT	
V18A	Damper	6AX4GT	6AX4GT	4CG	
B	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RMA BASE TYPE	NOTES
V21	20CP4	20CP4	12D	① 3/8" longer
		20DP4 ①	12D	② Circuit changes necessary
		20CP4A ①	12D	
		20DP4A ①②	12D	
		20HP4 ①②	12C	
		20HP4A ①②	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AFH2-57		UPT4445		TVL-2764	▲ Filter
B	40	450							▲ Filter
C2A	80	450		AFH2-62		UPT8145		TVL-2776	▲ Decoupling
B	10	450							▲ Decoupling
C3A	125	25		PRS25/100		BRH251A		TVA-1207	▲ Vert. Output Cathode
B	60	200		AFH1-30		UPR625		TVL-1525	■ Decoupling
C4	50	350		PRS450/40		BR4035		TVA-1713	Audio Output Dec.
C5	50	350		PRS450/40		BR4035		TVA-1713	Video Output Cathode
C6	3-9				829-10				Variable Trimmer
C7	5-3				829-3				Variable Trimmer
C8	120			SI120	D6-121	TMST12	GP2K-121	5GA-T12	RF Amp. Decoupling
C9	1000			SI1000	D6-102	TMSD1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C10	100			SI100	D6-101	TMST1	GP1K-101	5GA-T1	RF Coupling
C11	5-3				829-3				Variable Trimmer
C12	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C13	10			SI10N750	TCN-10		N750K-100	5TCU-Q5	Fixed Trimmer
C14	5-3				829-3				Variable Trimmer
C15A	1000			BPD-2X001	DD-2-102	TMSDD1	812-001	5HK-2D1	Conv. Fil. Bypass
B	1000								RF Bypass
C16	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C17	120			SI120	D6-121	TMST12	GP2K-121	5GA-T12	IF Coupling
C18A	1500			BPD-2X0015	DD-2-152	TMSDD15	812-0015	5HK-2D15	Fil. Bypass
B	1500								AGC Filter
C19	.01	600		P688-01	D6-103	PTE68I	GP2-333-103	6TM-S1	RF Bypass
C20A	1500			BPD-2X0015	DD-2-152	TMSDD15	822-0015	5HK-2D15	AGC Filter
B	1500								1st. Video IF Dec.
C21	270	500		SI270	D6-271		GP2K-271	5GA-T27	IF Coupling
C22	47			SI47NP0	TCZ-47		NP0K-470	5TCC-Q47	Fixed Trimmer
C23A	1500			BPD-2X0015	DD-2-152	TMSDD15	822-0015	5HK-2D15	AGC Filter
B	1500								2nd. Video IF Dec.
C24	270	500		SI270	D6-271		GP2K-271	5GA-T27	IF Coupling
C25	1500			SI1500	D6-152	TMST15	GP2L-152	5HK-D15	3rd. Video IF Dec.
C26	100			SI100	D6-101	TMST1	GP1K-101	5GA-T1	3rd. Video IF Cathode
C27	75								Fixed Trimmer
C28	270	500		SI270	D6-271		GP2K-271	5GA-T37	IF Coupling
C29	390	500		1469-0004	D6-391	SR5T4	GP2K-391	MS-34	IF Coupling
C30	47			S147NP0	TCZ-47		NP0K-470	5TCC-Q47	Fixed Trimmer
C31	1500			SI150	D6-152	TMSD15	GP2L-152	5HK-D15	AGC Filter
C32	25	400		P488-25		PTE4P25		4TM-P25	AGC Filter
C33	1500			SI1500	D6-152	TMSD15	GP2L-152	5HK-D15	RF Bypass
C34	47	500		1469-00005		5R5Q5		MS-45	Fixed Trimmer
C35	10			SI10	D6-100	5W5QI	GP1K-100	5GA-Q1	Video Det. Filter
C36	.05	400		P488-05	DF-503	PTE485		4TM-S5	Video Coupling
C37	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Video Amp. Cathode
C38	.004	600		P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Video Output Cathode
C39	.25	400		P488-25		PTE4P25		4TM-P25	RF Bypass
C40	.01	600		P688-01	D6-103	PTE68I	GP2-333-103	6TM-S1	Acc. Anode Bypass
C41A	1500			BPD-2X0015	DD-2-152	TMSDD15	812-0015	5HK-2D15	1st. Sound IF Dec.
B	1500								1st. Sound IF Cathode
C42	270	500		SI270	D6-271		GP2K-271	5GA-T27	Sound IF Coupling
C43	1500			SI1500	D6-152	TMSD15	GP2L-152	5HK-D15	2nd. Sound IF Dec.
C44	270	500		5GA-T27	D6-271	SR5T3	GP2K-271	5GA-T27	Diode Load Cap.
C45	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C46	.01	600		P688-01	D6-103	PTE68I	GP2-333-103	6TM-D1	Audio Coupling
C47	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	AF Amp. Plate Bypass
C48	.01	600		P688-01	D6-103	PTE68I	GP2-333-103	6TM-S1	Audio Coupling
C49	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C50	.05	400		P488-05	DF-503	PTE485		4TM-S5	RF Bypass
C51	470	500		1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Sync Coupling
C52	.01	600		P688-01	D6-103	PTE68I	GP2-333-103	6TM-S1	Sync Coupling
C53	.15	600		684-15					Sync Amp. Cathode
C54	470	500		1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Vert. Integrator Net.
C55	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Vert. Integrator Net.
C56	470	500		1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Vert. Integrator Net.
C57	4700	500		1464-005		1DR5D5		MS-25	Vert. Osc. Grid Cap.
C58	.05	600		P686-05	DF-503	PTE685		6TM-S5	Vert. Discharge
C59	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C60	.022	600		P688-022		PTE6S22		6TM-S22	Vert. Feedback
C61	.022	600		P688-022		PTE6S22		6TM-S22	Vert. Feedback
C62	50			SI50	D6-500	TMSQ5	GP1K-500	5GA-Q5	Horiz. Sync Coupling
C63	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Horiz. Sync Coupling
C64	180								Horiz. Lock *
C65	82								Horiz. Lock *
C66	.25	400		P488-25		PTE4P25		4TM-P25	Horiz. AFC Filter
C67	.022	600		P688-022		PTE6S22		6TM-S22	Horiz. AFC Filter
C68	.05	400		P488-05	DF-503	PTE485		4TM-S5	Horiz. AFC Plate
C69	180	500							Horiz. Osc. Grid Cap. .
C70	.01	600		P688-01	D6-103	PTE68I	GP2-333-103	6TM-S1	Fixed Trimmer
C71	.002	600		P688-002		PTE6D2		6TM-D2	Horiz. Discharge
C72	390	500		1464-0004		5R5T4		MS-34	Horiz. Sweep Coupling
C73	.05	400		P488-05	DF-503	PTE485		4TM-S5	Horiz. Output Screen
C74	.035	1000							Damper Filter
C75	.022	1000		P1088-022		PTE16S22		MB-822	Damper Filter †
C76	500	20000		HV20A	TW1-502	MM-A20TS	410-501		HV Filter
C77	.01	600		689ZGXY-01		PJ6SI		6TM-S1	Line Filter
C78	.01	600		689ZGXY-01		PJ6SI		6TM-S1	Line Filter

* These items replaced by single variable trimmer in late models.
† Some models use .027MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	10KΩ	½	131-0003	QJ-318 *	RTV-1		Contrast - Panel
B	1Meg	½					Volume & SW - Rear
R2A	50KΩ	½	131-0012	QU-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	50KΩ	½	131-0012	QU-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	1Meg	½	131-0013	QU-137	AG-61-S	AN-89	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R4A per instructions
R5A	5000Ω	½	131-0001	QU-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	2.5Meg	½	131-0002	QU-239	AG-84-S	AN-83	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7	5000Ω	4	131-0014		RTV-10	SVP-989	Focus Control - Wire Wound
R8	3000Ω	1					Threshold Control - Wire Wound

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-116 & P1-121 (Panel)
B13-137 & R1-205 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ±10% UNLESS OTHERWISE NOTED
R9	3900Ω	½		BTS-3900	Antenna Coil Shunt
R10	47KΩ	½			RF Amp. Grid
R11	10KΩ	½			RF Coil Shunt
R12	2200Ω 20%	½		BTS-2200	RF Amp. Decoupling
R13	4700Ω	½		BTS-4700	Mixer Grid
R14	220KΩ 20%	½			Mixer Grid
R15	15KΩ 20%	½		BTS-15K	Mixer Plate
R16	10KΩ	½			Osc. Grid
R17	4700Ω	½		BTS-4700	Osc. Plate
R18	1000Ω 20%	½		BTS-1000	AGC Network
R19	15KΩ	½			1st. Video IF Amp. Grid
R20	39Ω	½			1st. Video IF Amp. Cathode
R21	1000Ω 20%	½		BTS-1000	1st. Video IF Amp. Decoupling
R22	1000Ω 20%	½		BTS-1000	AGC Network
R23	10KΩ 5%	½			2nd. Video IF Amp. Grid
R24	39Ω	½			2nd. Video IF Amp. Cathode
R25	1000Ω	½		BTS-1000	2nd. Video IF Amp. Decoupling
R26	10KΩ 5%	1			2nd. Video IF Amp. Plate
R27	150Ω 20%	½		BTS-150	3rd. Video IF Amp. Cathode
R28	1000Ω	½		BTS-1000	3rd. Video IF Amp. Decoupling
R29	3900Ω	½		BTA-3900	3rd. Video IF Amp. Plate
R30	1Meg 20%	½		BTS-1Meg	AGC Network
R31	27KΩ	½		BTS-27K	AGC Network
R32	100KΩ 20%	½		BTS-100K	AGC Rectifier Diode Load
R33	5600Ω	½		BTS-5600	Video Det. Diode Load
R34	470Ω 20%	½		BTS-470K	Video Amp. Grid
R35	220Ω	½		BTS-220	Video Amp. Cathode
R36	3300Ω 20%	½		BTS-3300	Video Amp. Plate
R37	1000Ω	½		BTS-1000	Video Amp. Plate
R38	56KΩ	½		BTS-56K	Voltage Divider
R39	10KΩ 20%	½		BTS-10K	Isolation
R40	5000Ω	5		1 3/4A-5000	Voltage Divider - Wire Wound
R41	2700Ω 20%	½		BTS-2700	Contrast Control Shunt
R42	100Ω 20%	½		BTS-100	Video Output Cathode
R43	4700Ω	2		BTB-4700	Video Output Plate
R44	180KΩ	½		BTS-180K	Voltage Divider
R45	330KΩ 20%	½		BTS-330K	Acc. Anode Load
R46	150Ω 20%	½		BTS-150	1st. Sound IF Amp. Cathode
R47	1000Ω	½		BTS-1000	1st. Sound IF Amp. Decoupling

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R48	10KΩ 20%	½			2nd. Sound IF Amp. Grid
R49	10KΩ	1			2nd. Sound IF Amp. Decoupling
R50	22KΩ 20%	½		BTS-22K	De-emphasis
R51	100KΩ	½		BTS-100K	Discriminator Diode Load
R52	100KΩ	½		BTS-100K	Discriminator Diode Load
R53	10Meg 20%	½		BTS-10Meg	AF Amp. Grid
R54	330KΩ 20%	½		BTS-330K	AF Amp. Plate
R55	82KΩ	½		BTS-82K	Output Grid
R56	180KΩ 20%	½		BTS-180K	Output Grid
R57	330KΩ 20%	½		BTS-330K	Voltage Divider
R58	500Ω	5		1 3/4A-500	Output Decoupling - Wire Wound
R59	470KΩ 20%	½		BTS-470K	Isolation
R60	2.2Meg 20%	½		BTS-2.2Meg	Sync Separator Grid
R61	220KΩ	½		BTS-220K	Sync Separator Plate
R62	3300Ω 20%	½		BTS-3300	Sync Amp. Cathode
R63	8200Ω 20%	2		BTB-8200	Sync Amp. Plate
R64	56KΩ	½		BTS-56K	Integrator Network
R65	56KΩ	½		BTS-56K	Integrator Network
R66	56KΩ	½		BTS-56K	Integrator Network
R67	100KΩ	½		BTS-100K	Vert. Feedback
R68	470KΩ	½		BTS-470K	Vert. Osc. Grid
R69	820KΩ	½		BTS-820K	Vert. Osc. Plate
R70	10KΩ	½		BTS-10K	Vert. Peaking
R71	560Ω	½		BTS-560	Vert. Output Cathode
R72	820KΩ	½		BTS-820K	Vert. Output Grid
R73	560KΩ 5%	½		BTS-560K 5%	Horiz. AFC Grid
R74	180KΩ	½		BTS-180K	Horiz. AFC Cathode
R75	100KΩ	1		BTA-100K	Horiz. AFC Cathode
R76	8200Ω 20%	½		BTS-8200	Horiz. AFC Filter
R77	120KΩ	½		BTS-120K	Voltage Divider
R78	220KΩ	½		BTS-220K	Voltage Divider
R79	3.3Meg	1		BTA-3.3Meg	Voltage Divider
R80	100KΩ	1		BTA-100K	Horiz. Osc. Grid
R81	22KΩ	1		BTA-22K	Horiz. Osc. Plate
R82	10KΩ	2		BTS-10K	Horiz. Osc. Transformer Shunt
R83	22KΩ 20%	½		BTS-22K	Horiz. Osc. Transformer Shunt
R84	150KΩ	½		BTS-150K	Horiz. Feedback
R85	47Ω 20%	½			Parasitic Suppressor
R86	1Meg 20%	½		BTS-1Meg	Horiz. Output Grid
R87	47Ω 20%	½			Parasitic Suppressor
R88	3000Ω	2			Horiz. Output Screen
R89	6800Ω	1		BTS-6800	Linearity Coil Shunt
R90	1Meg	1			H.V. Filter
R91	130Ω	5		1 3/4A-125	Focus Coil Shunt - Wire Wound
R92	8KΩ	2			Voltage Divider
R93A	1500Ω	3			Bleeder - Wire Wound - See Note 1
B	15KΩ	10			Bleeder - Wire Wound
R94	300Ω	28			Voltage Divider - Wire Wound - See Note 2

Note 1. Not used in all Models
Note 2. On sets using P.M. focusing R94 replaces R7, R91 & T5.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ②2.24A	770VCT ②.270ADC	5VAC ②3A	6.3VAC ②8.7A SEC. 4 6.3VAC ②1.1A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	570Ω tap ② 63Ω	10Ω tap ② .7Ω, 7.2Ω SEC. 2 0Ω			MVO-7		Horiz. Output Trans.
T3	1.2K tap ⑤						Vert. Output Trans.
T4A	12Ω			A-8140 ①			Horiz. Deflection Coils
B	15Ω			DY-9	MDF-70		Vert. Deflection Coils
T5	58Ω	420Ω		FC11 ②			Focus Coil

① Drill new mtg. holes
② Fabricate new mtg. bracket or use original focus coil housing.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	4.5KΩ	3.2Ω	300Ω	.7Ω		A-3825 ③	A-2930	RG-8	③ Drill one new mtg. hole.

TRAD MODELS C-2020, C-2420, CD-2020, T-1720

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	TRAD PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.2Ω		Mod. P8-V ST-116	8A31	
	CONE DIA.	V. C. DIA.				
SP1B	8"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	TRAD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.270A	50Ω	1.5 Hy.		C-2326 ①	C-2991 ①	TR-3300①	① Drill one new mtg. hole

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRAD PART No.	MERIT PART No.	
L2	Ant. Coil	0Ω				
L3	Fil. Choke	0Ω				
L4	RF, Mixer Grid & Osc. Coils	0Ω				
L5	Fil. Choke	0Ω				
L6	1st. Video IF	1.2Ω				
L7	Fil. Choke					Not used in some models
L8	2nd. Video IF	.2Ω	0Ω			Includes sound take-off
L9	3rd. Video IF	.3Ω				
L10	21.25MC Trap	0Ω			TV-150	
L11	4th. Video IF	.2Ω				Includes sound take-off
L12	4.5MC Trap	2Ω			TV-151	
L13	Peaking Coil	5.2Ω			TV-182	120 Microhenries, wound on 22KΩ resistor
L14	Peaking Coil	7.3Ω			TV-185	250 Microhenries
L15	Peaking Coil	5.2Ω			TV-182	120 Microhenries wound on 22KΩ resistor
L16	Peaking Coil	4.7Ω			TV-181	93 Microhenries
L17	Peaking Coil	5.2Ω			TV-182	120 Microhenries wound 22KΩ resistor
L18	Peaking Coil	4.1Ω			TV-181	93 Microhenries
L19	Sound IF	.2Ω				
L20	Discr. Trans.	.2Ω	.2Ω		TV-106	Tap ⓐ .1Ω
L21	Horiz. Osc.	78Ω	46Ω		TV-162	Tap ⓐ 22Ω
L22	Width Coil	.6Ω			MWC-2	
L23	Horiz. Lin.	36Ω			MWC-1	

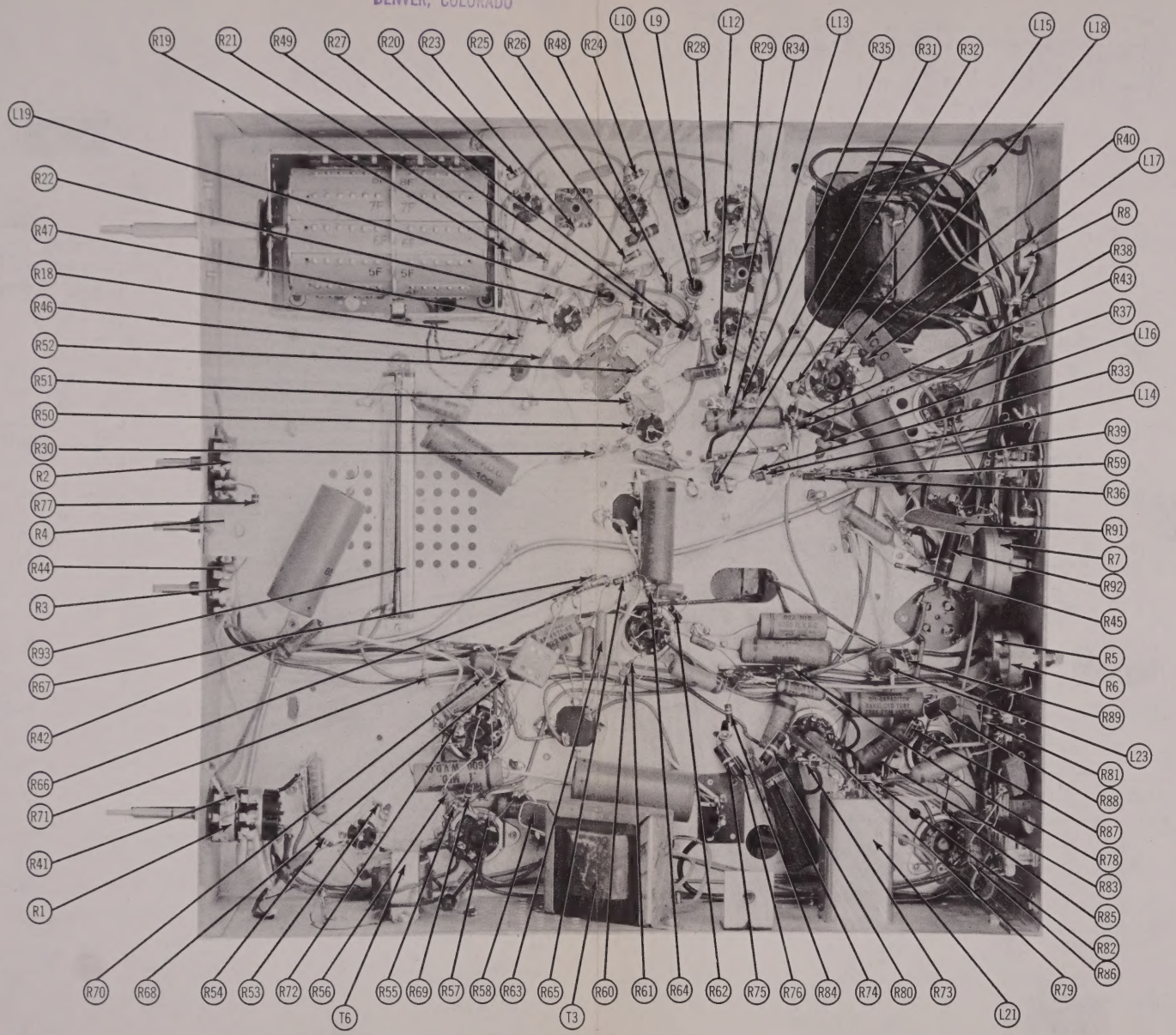
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRAD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	GJV	1/4 A. 250 V.			318.250 (3AG-P/T)		GJV 1/4	

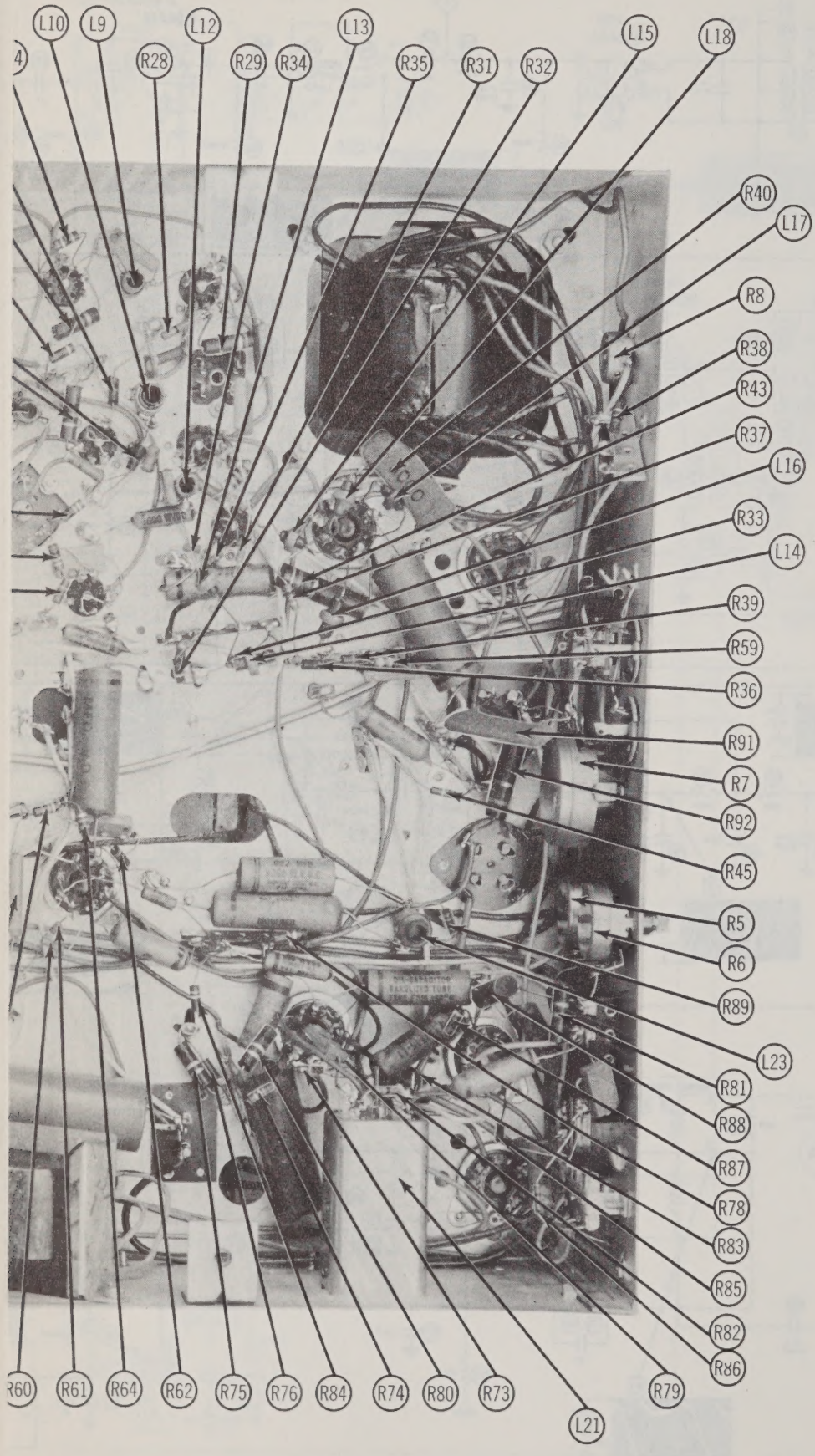
MISCELLANEOUS

ITEM No.	PART NAME	TRAD PART No.	NOTES
M2	RF Tuner		
M3	Switch		Black-White & Color
M4	Switch		TV-Phono
M5	Ion Trap		
B4	Trimmer		(Dual) Horiz. Drive & Horiz. Lock (50-360MMF)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



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